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SOME SOCIOLOGICAL ASPECTS OF A FLUORIDATION PLEBISCITE

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

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by

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ABSTRACT

A random sample survey of the City of Edmonton was employed to obtain data concerning opinions on fluoridation and on voting behaviour at a plebiscite on this issue. Two major aspects of this survey are reported in this thesis:

1. An analysis of the dependent variables, interest in fluoridation opinions on fluoridation, voting turn-out, and direction of vote, in terms of a number of social characteristics.

2. The cogency of the political and religious frames of reference for opinions on fluoridation.

It was found that interest in fluoridation was associated with "while collar" and professional occupational status, income levels above $3000, high-school education and ages less than forty years. Men and women were found to be equally interested in the issue. Generally speaking, the same people that were interested in other public issues were also interested in fluoridation, while fluoridation appeared to be as interesting to the public as politics and municipal issues.

The following characteristics distinguished the anti-fluoridationist; age over fifty years, a grown-up family, no high-school education and income under $3000. These same characteristics also distinguished those that voted against the issue. Those who were indifferent or undecided about the issue were characterised by the following; no high-school education, "working class" occupation and income under $3000.

Two characteristics distinguished the voter from the non-voter. The higher the educational level, the greater the turn-out,

and property owners voted more than did those not owning property. Strong tendencies were found indicating that the older the individual, the higher the income and the higher the occupational level, the greater the turn-out.

Political preference was not a distinguishing characteristic between those in favour of and those opposed to fluoridation, but those with a political preference were more likely to be in favour of fluoridation than were those with no political preference. Few respondents perceived political parties as taking stands on the fluoridation issue or attributed importance in making up their minds on the issue to political parties.

There was no difference between Protestants and Catholics in the direction of their opinions on fluoridation but Protestants were more likely to have a polar opinion on the issue. Fundamentalists were more likely to have an "anti" opinion on fluoridation than were other Protestants. A religious interpretation of fluoridation which was labelled "the pure water theme" accounted for approximately twenty per cent of the anti opinions on fluoridation. Those who held this opinion were adherents of a number of churches and none attributed a negative stand on the issue to their church. Pro-fluoridationists assigned a negative stand to a number of churches and attributed anti-opinions on fluoridation to religious bias.

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TABLE OF CONTENTS

CHAPTER PAGE

I. INTRODUCTION AND REVIEW OF THE LITERATURE 1

Introduction 1

Designation of the Problem 3

Voting Behaviour; a Selected Review of the Literature . 4

The Demographic Approach 4

Social Characteristics and Interest in the Elections. 7

Social Characteristics and Voting Turn-out 12

Social Characteristics and Political Preference 16

Explanations of Demographic Regularities 19

II. HYPOTHESES WITH RESPECT TO THE FLUORIDATION PLEBISCITE AS A SPECIAL CASE OF VOTING BEHAVIOUR 22

Fluoridation: the Issue and its Literature 22

The Research Hypotheses 27

The Dependent Variables 27

The Dependent Variables and Social Characteristics .. 29

Relationships between the Dependent Variables 33

Summary of the Research Hypotheses 36

III. SOME HYPOTHESES CONCERNING THE ROLE OF RELIGION AND POLITICS IN THE FORMATION OF OPINIONS ON FLUORIDATION 39

The Religious Frame of Reference 41

The Political Frame of Reference 43

Development of the Hypotheses 46

Summary 52

IV. METHOD AND PROCEDURES 53

The Interview Schedule 53

The Pretest of the Schedule 53

Interviewer Selection and Training 53

CHAPTER PAGE

Pretest Sample and Pretest Survey 54

Analysis of Pretest 55

The Survey 55

The Population 55

The Sample 55

Sampling Method 56

The Interviewers 59

Replacements and Mortalities 62

Processing of the Data 65

V. THE FLUORIDATION PLEBISCITE AS A SPECIAL CASE OF VOTING BEHAVIOUR 67

Social Characteristics and the Fluoridation Plebiscite 67

Sex 67

Age 70

Age of Children 74

Education 78

Occupation and Income 81

Property Ownership 86

Analysis of the Dependent Variables 90

Interest in fluoridation 90

Opinions on fluoridation 93

Voting turn-out 96

Direction of vote 103

VI. THE ROLE OF RELIGIOUS AND POLITICAL INSTITUTIONS IN THE FLUORIDATION PLEBISCITE 107

Political Influence and the Fluoridation Plebiscite ... 107

Religion and the Fluoridation Plebiscite 120

CHAPTER PAGE

VII. DISCUSSION AND CONCLUSIONS 131

The Fluoridation Plebiscite as a Special Case of Voting Behaviour 131

Religious and Political Frames of Reference 139

Some General Theoretical Considerations 143

Some Shortcomings of the Study 149

Suggestions for Further Research 151

BIBLIOGRAPHY 154

APPENDIX A. Specimen Survey Schedule 157

APPENDIX B. A Note on the Respondents Attending the Municipal Polls but not Voting on the Fluoridation Plebiscite 168

LIST OF TABLES

TABLE		PAGE
I.	Refusals and Other Mortalities	63
II.	Percentage Distribution of Interest in Fluoridation, Opinions on Fluoridation, Voting Turn-out and Direction of Vote According to Sex of the Respondent	68
III.	Percentage Distribution of Interest in Fluoridation, Opinion on Fluoridation, Voting Turn-out and Direction of Vote According to Selected Categories of Age	71
IV.	Percentage Distribution of Interest in Fluoridation, Opinions on Fluoridation, Voting Turn-out and Direction of Vote According to Age of Respondent's Youngest Child	75
V.	Percentage Distribution of Interest in Fluoridation, Opinions on Fluoridation, Voting Turn-out and Direction of Vote According to Selected Categories of Education	79
VI.	Percentage Distribution of Interest in Fluoridation, Opinions on Fluoridation, Voting Turn-out and Direction of Vote According to Income	82
VII.	Percentage Distribution of Interest in Fluoridation, Opinions on Fluoridation, Voting Turn-out and Direction of Vote According to Occupation	85
VIII.	Percentage Distribution of Interest in Fluoridation, Opinions on Fluoridation, Voting Turn-out and Direction of Vote, According to Property Ownership Status	87
IX.	Percentage Distribution of Interest in Various Public Issues	91
X.	Comparison of the Respondents' Interest in Fluoridation and Their Interest in Other Issues	93
XI.	Percentage Distribution of Opinions on Fluoridation According to Degrees of Interest in the Issue	95
XII.	Comparison of the Actual Percentage Votes and the Percentage Votes Reported by the Sample at the Fluoridation Plebiscite and the Provincial and Federal Elections	98

TABLE PAGE

XIII. Percentage Distribution of Opinions on Fluoridation According to Whether the Respondent Voted at the Plebiscite 100

XIV. Percentage Distribution of Voting Turn-out According to Interest in Fluoridation 101

XV. Voting Activity of Voters and Non-voters in the City Elections at the Federal and Provincial Elections 103

XVI. Percentage Distribution of the Direction of the Respondent's Vote According to his Opinion on Fluoridation 105

XVII. Percentage Distribution of Interest in Fluoridation, Opinions on Fluoridation, Voting Turn-out and Direction of Vote According to Political Preference 108

XVIII. Political Preference and Perception of Respondent's Own Party's Stand on the Fluoridation Issue 113

XIX. Political Preference and Perception of "Other" Parties' Stands on Fluoridation 115

XX. Percentage Distribution of Opinions as to Whether Political Parties Ought to Take a Stand on the Fluoridation Issue, According to Political Preference 118

XXI. Percentage Distribution of Interest in Fluoridation, Opinions on Fluoridation, Voting Turn-out and Direction of Vote According to Religion 121

XXII. Religion and Respondent's Perception of Own Church's Stand on the Issue of Fluoridation 125

XXXIII. Religion and Perception of "Other" Religions' Stands on the Issue of Fluoridation 127

XXIV. Percentage Distribution of Respondents' Opinions as to Whether Churches ought to Take a Stand on the Issue of Fluoridation According to the Respondent's Religion 128

XXV. Religion of Respondents who Describe their Church or Religion as being Important to Them in the Formation of their Opinion on Fluoridation 130

CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

INTRODUCTION

In October 1957 the issue as to whether the city water of Edmonton, Alberta, should be fluoridated or not was presented in plebiscite form to the citizens in conjunction with the annual municipal election. Provincial law required a majority of sixty-six and two-thirds per cent of the total votes cast in order to pass the plebiscite, and the issue was defeated by approximately sixty-three per cent to thirty-seven per cent. Two years elapsed (as required by provincial law) and the issue was presented in October 1959, again in conjunction with the municipal elections. It was once again defeated with approximately fifty-five per cent of the votes cast accruing to those in favour of fluoridation and forty-five per cent to those against.

The situation obviously had implications for the sociologist as well as for the private citizen and in January 1960, a research team of three[1] began the task of translating the problem into sociological terms.

The view taken at the outset was that "fluoridation" was a particular example of an opinion and was characterised by the

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[1]Gordon K. Hirabayashi, Associate Professor of Sociology, University of Alberta; Esther S. Hirabayashi, M.A. Candidate in Sociology, University of Washington; and the writer.

following:

1. it was of a controversial nature and offered at least two diametrically opposed viewpoints;

2. it appeared to have wide interest and relevance to the general population;

3. the campaigns were accompanied by a great deal of coverage in the mass media;

4. a measurable behavioural correlate to the opinion in the form of the casting of the ballot in the plebiscite was available.

In this respect, then, the orientation of the study was transposed from the specific issue of fluoridation to a general study of an opinion and its voting correlate, with the idea that hypotheses and theory developed in connection with fluoridation could be generalised to other issues of similar characteristics.

In order to test this generality it was hoped that another issue would be examined at the same time as fluoridation. A survey of a number of issues current at the time suggested that they all lacked equivalency to fluoridation in one or more aspects.[2] To the extent, therefore, that a particular issue before the public is not characterised by similar aspects to those of fluoridation, the possibility of generalisation might be limited.

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[2]Among the issues examined were the export of natural gas and capital punishment, both of which lacked the general mass media coverage and the overt response of voting.

DESIGNATION OF THE PROBLEM

Three major areas of investigation were undertaken by the research team, the boundaries being defined roughly as follows:

1. The relationship between mass media exposure and opinion formation on fluoridation.

2. Some aspects of the role of politics and religion in the formation of opinions on fluoridation.

3. An analysis of voting behaviour in the plebiscite.

The latter two areas, for which this writer was responsible are discussed in this thesis. These areas may be elaborated as follows:

Politics, Religion and Fluoridation. This aspect of the study arose out of exploratory studies designed to shed light on the formation of the opinion and in particular on the perception of the issue. The question asked, in effect, is whether political and religious frames of reference are cogent to the fluoridation issue and, if so, what are the functions of those frames of reference relative to the opinion formation? The background, theory and hypotheses of this aspect of the study will be considered in Chapter III.

Voting Behaviour in the Plebiscite. In reviewing the progress in voting studies from the first major study in the Roosevelt-Wilkie presidential election of 1940 in Erie County, Ohio[3] to the presidential

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[3]Paul F. Lazarsfeld, Bernard Berelson, and Hazel Gaudet, The People's Choice (second edition; New York: Columbia University, 1948).

study in 1952, Berelson observed that "a still further step in the right direction will be made when panel studies are set up in local elections where voters choose among non-partisan candidates and unstructured referenda . . . ."[4]

While the fact that the present study was begun after the plebiscite had taken place precluded the use of the panel study method, it was considered that the fluoridation plebiscite provided a case in point in which generalisations as to voting behaviour could be tested. It was, in other words, felt that repetition of certain aspects of the type of study carried out on presidential and other national elections would be a contribution to the body of knowledge on voting behaviour.

With this in mind, an extensive review of the literature on voting behaviour was carried out and the remainder of this chapter will report some of the major and relevant findings. Chapter II will consider these findings in relation to the specific issue of fluoridation and develop the various research hypotheses.

VOTING BEHAVIOUR: A SELECTED REVIEW OF THE LITERATURE

The Demographic Approach

While the studies reviewed in the literature ranged from a college class experiment[5] to nation-wide sampling surveys,[6] from use

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[4]Bernard Berelson, Paul F. Lazarsfeld, and William N. McPhee, Voting (Chicago: University of Chicago Press, 1954), x.

[5]A. Thomsen, "Psychological Projection and the Election: A Simple Class Experiment," Journal of Psychology, XI (1941), 115-117.

[6]Angus Campbell, et al., The Voter Decides (Chicago: Row-Peterson, 1954).

of the inverted factor technique in establishing voting groups among congressmen,[7] to a comparison of the choice in voting to that involved in marketing,[8] one particular line of enquiry appeared to have particular relevance for the study of a plebiscite on fluoridation. This approach, in effect, asks three major questions. First, what are the social characteristics of those who are interested in politics? Secondly, what are the social characteristics of those who express particular party preferences? Thirdly, what are the social characteristics of those who vote and those who do not vote? These questions seem, in fact, to be fundamental to any analysis of voting behaviour and they provide the starting point for more detailed studies such as use of multivariate analysis to establish relationships between the various characteristics,[9] or to elucidate opinion formation in terms of cross pressures.[10]

The analysis of voting and political behaviour by the social characteristics of the population is a relatively late development in the history of the social sciences despite the fact that modern societies have maintained voting records that "run back over a century of eventful history."[11] Although the late 1920's and early 1930's saw a number of

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[7]H. B. Carlson and W. Harrell, "Voting Groups among Leading Congressmen Obtained by means of the Inverted Factor Technique," Psychological Bulletin, XXXVIII (1941), 716.

[8]J. J. Buchanan, "Individual Choice in Voting and the Market," J. Political Economy, LXII (August, 1954), 334-343.

[9]Paul F. Lazarsfeld, "Interpretation of Statistical Relations as a Research Operation," in Paul F. Lazarsfeld and Morris Rosenberg (eds.), The Language of Social Research (Glencoe: The Free Press, 1957), 115-125.

[10]Berelson, Lazarsfeld, and McPhee, op.cit., 230-231.

[11]Seymour M. Lipset, et al., "The Psychology of Voting: An Analysis of Political Behaviour." in Gardner Lindzey (ed.), Handbook of Social Psychology (Cambridge: Addison Wesley Publishing Company, 1954), 1126.

studies that concerned themselves with the social characteristics of the voters and non-voters,[12] it appears that the main impetus given to the study of voting behaviour stemmed from the panel studies, the first of which took place in Erie County, Ohio, on the American presidential election of 1940.[13] From this date onwards, every presidential election in the United States has received an increasing amount of attention from the sociologist, while in other countries, similar studies to those in the United States have analysed national elections in Britain[14] and France[15] in addition to more local analyses such as that of Cervin's in the 1952 Quebec provincial elections.[16]

These studies have provided an extensive body of knowledge which consists largely of a number of empirical facts, mostly unrelated to each other and not as yet organised into a systematic framework. It is true that, generally speaking, such facts fit into what might be called a demographic frame of reference but it is felt by at least one authority

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[12]W. Dennis, "Traits Associated with Registration and Voting," Journal of Abnormal and Social Psychology, XXVII (1932), 270-278; G.F. Dunkelberger and E.K. Rumberger, "Who are the Voters?" Journal of Educational Sociology, V (1931),159-161; B.C. Arneson, "Non-voting in a Typical Ohio Community," American Political Science Review, IXX (1925), 816-825.

[13]Lazarsfeld, Berelson and Gaudet, op.cit.

[14]A. H. Birch and Peter Campbell, "Voting Behaviour in a Lancashire Constituency," British Journal of Sociology, I (1950), 197-208.

[15]Jean Stoetzel, "Voting Behaviour in France," British Journal of Sociology, VI (1955), 104-122.

[16]Vladmir Cervin, "Some Correlates of Voting Behaviour in the 1952 Quebec Elections; a Pilot Study," Canadian Journal of Economics and Political Science, XXI (1955), 370-373.

that it is doubtful "whether a s[illegible]ematic organisation of the field is worthwhile at this time."[17]

At the same time, many of these facts appear to recur from one study to the next, suggesting that the studies are neither so fortuitous nor unrelated as Lipset suggests.[18] In fact, the demographic framework has been so frequently adopted and the same social characteristics have been found to demonstrate similar relationships to voting behaviour in so many electoral situations varying in both time and space that these empirical facts may perhaps have at least some level of generality. The focus of this review will be on some of these social characteristics and relevant aspects of voting behaviour.

Social Characteristics and Interest in Elections

The study of voting behaviour per se has often gone side by side with studies of mass communication and its influence in opinion formation. The campaigns and the wide mass media coverage have encouraged the social scientist to gather information about the influence of the mass media at the same time as he collected his data on voting intentions and behaviour. In fact, the 1940 Erie County study was primarily concerned with this aspect of the presidential election. One important variable with which this latter study concerned itself was that of the potential voter's interest in the campaign and election. Interest in this respect was considered as practically synonymous with psychological "attention." The index of the respondent's interest used in the study was a simple self-rating which was found to stand up well under tests of consistency and validity. A subjective "great

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[17]Lipset, et al., op cit., 1124.

[18]Ibid.

interest" response, for example, was usually associated with more frequent opinions, more active participation in the campaign and greater exposure to campaign propaganda. In addition, although approximately one-third of the population expressed great interest in the election,[19] those who were greatly interested were not distributed at random throughout the population but appeared to be drawn from various segments of the population as distinguished by certain social characteristics.

Sex. Supporting the prevailing commonsense belief that women are, in general, less interested in public affairs than are men, four major studies present evidence that men are, in fact, more interested in elections than are women. Thus, in the Erie County Study, thirty-three per cent of the men but only twenty-three per cent of the women expressed great interest in the election[20] while comparable figures were found in Elmira, New York,[21] in the British Study in 1949,[22] and in France.[23]

Age. Age is another discriminating factor in all of the studies previously mentioned, Voting reporting thirty-five per cent of the respondents over the age of forty-five as being very interested in politics in contrast to twenty-one per cent of those under the age of forty-five.[24] By holding education constant, The People's Choice

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[19]Lazarsfeld, Berelson, and Gaudet, op.cit., 40. This proportion appears typical of the United States, the studies on the 1948 and 1952 elections also reporting approximately one-third interested.

[20]Lazarsfeld, Berelson, and Gaudet, op.cit., 45.

[21]Berelson, Lazarsfeld, and McPhee, op.cit., 25.

[22]Birch and Campbell, op.cit., 197.

[23]Stoetzel, op.cit., 106.

[24]Berelson, Lazarsfeld, and McPhee, op.cit., 25.

demonstrates that age differentiation is particularly pronounced with educated people, forty-one per cent of those over forty-five with some high school or more expressing great interest in the election compared to only twenty-six per cent of those with similar education but under forty-five. The difference is not quite so marked in the "no high school" category although more older people than younger express great interest.[25]

Education. As might be expected, a most striking differentiation occurs when interest is analysed in terms of education -- "formal education is a direct creator of interest."[26] Fifty-seven per cent of college educated people report a great deal of interest compared to only twenty-three per cent of those with grade school only.[27]

Socio-economic status. Education, of course, is very much related to social characteristics such as occupation and income and the usual practice has been to construct an index of socio-economic status based on occupational rankings, education, income (or source of income) and, in some cases, interviewer rating in terms of possession of home appliances and general house appearance. Using such an index, Voting reports that the upper socio-economic (SES) levels have more interest than the lower echelons, forty-eight per cent of the high SES reporting great interest compared to twenty-four per cent of the low SES.[28] The People's Choice studied the two

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[25]Lazarsfeld, Berelson, and Gaudet, op.cit., 44-45.

[26]Ibid., 42.

[27]Berelson, Lazarsfeld, and McPhee, op.cit., 25.

[28]Berelson, Lazarsfeld, and McPhee, op.cit., 25.

variables of SES and education simultaneously and concluded that,

> they have about equal importance in creating and maintaining the political interest . . . when both are high, one third express great interest in the election, when both are low, the proportion goes down to one fifth. In the middle range, the two factors approximately compensate one another.[29]

While the use of a single socio-economic index encompassing occupation, income and perhaps education is economical in terms of analytical procedures, the independent relation of each characteristic in turn to interest in elections and politics can be justified by the explanations that can be offered in terms of each variable for the differential distribution of interest. Thus, pecuniary self-interest, job satisfaction and education as a creator of interest are all offered as explanations and presumably each has relevance and validity.

Other characteristics. Besides the social characteristics that have been outlined above, interest has other aspects that make it of significance to a study of voting behaviour. For example, one finding that has particular relevance to a study of fluoridation is that the greater the partisanship, the greater the interest. Thus, fifty-four per cent of the Republicans and fifty-one per cent of the Democrats reported a great deal of interest in political affairs, while only fifteen per cent of the "neutral" respondents reported a similar amount of interest.[30] While this is not necessarily a tautologous finding, the causal relationship between partisanship and interest is not

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[29]Lazarsfeld, Berelson, and Gaudet, op.cit., 43.

[30]Berelson, Lazarsfeld, and McPhee, op.cit., 25-26.

established. Whether people are partisan because they are interested or interested because they are partisan is another question.

Interested voters follow class patterns of voting less strongly than do the uninterested suggesting that non-conformity is a function of interest.[31] Again, the sequence of causal relationship between interest and non-conformity is a matter of question. On the other hand, "cross-pressures," whether social or attitudinal, are likely to produce less interest. As the authors of Voting put it, "why remain so interested when there is some right on both sides anyway and hence less reason for investment in the outcome."[32] Similarly, conflicts in social pressures, such as, for example, experienced by the Catholic engaged in "big business" are likely to be resolved by "leaving the field" and hence a decrease in interest. Interest, up to this point, has been examined in the role of dependent variable but it takes on special significance when examined as the independent variable in relation to voting turnout. Thus, it seems that if the election is psychologically salient to the individual, he is far more likely to vote than the individual who merely has passing interest in the campaign. In other words, interest has very distinct conative properties. In 1948, eighty-two per cent of those expressing a great deal of interest in the campaign actually exercised their vote compared to only fifty-eight per cent with little or no interest.[33] Practically identical figures were found in the 1952 elections although

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[31]Mark Benney and Phyllis Geiss, "Social Class and Politics in Greenwich," British Journal of Sociology, L (1950), 313.

[32]Berelson, Lazarsfeld, and McPhee, op.cit., 27.

[33]Berelson, Lazarsfeld, and McPhee, op.cit., 31-33.

the differences were somewhat more marked in 1940 when ninety-six per cent of the very interested voted in contrast to only twenty-seven per cent who were not interested.[34]

With such a high correlation between interest and voting turnout, it is not surprising that the distribution of voters and non-voters according to the various social characteristics is somewhat similar. In fact, while "interest" as a variable was a relative latecomer to the field, the differentiation between voters and non-voters in terms of certain social characteristics appears to be a traditional part of the study of voting behaviour.

Social Characteristics and Voting Turn-out

The democratic ideal that all members of society should participate in the election of representatives as well as in important societal decisions is but seldom achieved. According to Stoetzel, the French perceive their voting privilege not as a right but as a duty which the non-voters see no reason to fulfill.[35] Powell goes even further and claims that the non-voters constitute an anti-democratic element in society and hence a potential danger to a government by representation. Further, the non-voter, Powell says, "tends to align himself both socially and economically with the disadvantageous elements of society, at least in the United States."[36] While this latter observation is of the "armchair" variety, it nevertheless holds a great deal of truth for certainly past studies record data showing

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[34]Lazarsfeld, Berelson, and Gaudet, op.cit., 46.

[35]Stoetzel, op.cit., 109.

[36]Inge B. Powell, "The Non-Voter--Some Questions and Hypotheses," Berkeley Pub. Soc. Inst., I (1955), 25-35.

differentiation of the voter - non-voter along social economic lines, with the latter on the lower half of the class structure.

Sex. Generally speaking, more men than women exercise their voting privilege. According to The People's Choice, sex is the only personal characteristic that affects non-voting independently of interest. That is the effect of sex within each interest category effectively distinguishes the voters and non-voters. For example, the voting abstention for women with no interest is fifty-six per cent, while for men with no interest, it is seventeen per cent.[37]

As early as 1932, Dennis reported a sex differential in registration and voting, noting that sex difference in voting in Lansing, Michigan, was largely accounted for by differential registration between the sexes, a fact that appears to support the contention that women fail to exercise their voting rights, even to the extent of not registering.[38] On a cross-cultural basis, in France, where the proportion of voting is in the region of eighty per cent, the abstentions from voting by men constituted seventeen per cent of the male population and those by women, twenty-four per cent of the female population.[39] In addition, similar findings are recorded by Birch and Campbell in Lancashire, England.[40]

The short time that women have had the right to vote is offered as an explanation of women's voting delinquency although, as Stoetzel points out, it could be equally well argued that since they obtained the vote only by militant demands they could be expected to utilise

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[37]Lazarsfeld, Berelson, and Gaudet, op.cit., 48.

[38]Dennis, op.cit., 273.

[39]Stoetzel, op.cit., 109.

[40]Birch and Campbell, op.cit., 197-208.

their hard won right. A more general explanation is that men are subject to more social pressures to vote and hence go to the polls even if not interested in the campaign or election. Women, on the other hand, are expected to take pride in their aloofness and explicitly leave the task to men.

Age. The tendency for younger people to be more radical in their political allegiances but to fail to follow through with their actual voting support has been observed by a number of sources.[41] In general the pattern of relationship between age and voting has proven to be a consistent one. Voting abstinence is greatest in the twenties with voting turnout gradually increasing through the thirties, reaching a peak in the forties and fifties and then beginning a decline which accelerates sharply in the more senior years.[42] It appears that the acceptance of voting responsibilities comes with increasing maturity and while it is regretted by at least one author that youth's abstentions rob political life of vitality, it may at least be compensated by relative political stability.[43]

Education. While Lipset, et al., report the general finding, as drawn from a review of the literature, that low education is related to low turn-out,[44] Stoetzel's report on French voting behaviour records a distinct trend towards lower voting turn-out at the higher educational levels. Thus, in the June 1951 elections, twenty-seven per cent of those with high education were voting abstainers whereas only nineteen per

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[41]Berelson, Lazarsfeld, and McPhee, op.cit., 334-36.

[42]Ibid.

[43]Lazarsfeld, Berelson, and Gaudet, op.cit., 45.

[44]Lipset, et al., op.cit., 1126-27.

cent of those with elementary and fifteen per cent of those with higher elementary education did not exercise their privilege.[45] This cultural difference is, of course, interesting in accounting for the relationships between education and voting turn-out but it should be noted that in the United States at least, the relationship has been qualified. With interest controlled, education does not correlate with turn-out, according to The People's Choice,[46] and Korchin finds that the correlation breaks down with socio-economic status controlled.[47]

Socio-economic status. As in the case of interest, socio-economic status implies a number of interacting variables including occupation and income. Again, the high correlation that might be expected between occupation and education is reflected in the relationships between occupational level and voting turn-out. Thus, Stoetzel reports that voting delinquency is highest in clerical workers and lowest in farmers and retired people.[48] On the other hand, in the United States, Dunkelberger and Romberger report that while seventy-three per cent of the professional workers cast their vote, only forty-one per cent of unskilled workers exercise their privilege.[49] Despite this cultural difference between the United States and Western Europe the relevance of occupation as an index of voting turn-out is established

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[45]Stoetzel, op.cit., 116.

[46]Lazarsfeld, Berelson, and Gaudet, op.cit., 47.

[47]Sheldon J. Korchin, "Psychological Variables in the Behaviour of Voters," (Doctoral Dissertation, Harvard University, 1946). Read in abstract only.

[48]Stoetzel, op.cit., 115.

[49]Dunkelberger and Romberger, op.cit., 159-61.

and it appears that there is sufficient evidence that, in general, it can be said that in North America, the higher the occupation, the higher the voting turn-out.[50]

In addition to the status of the occupation, Dennis has observed that the individual's occupational mobility was of particular significance in voting turn-out. The longer an individual held a particular job, the more likely he was to vote with individuals who have held the same job for five years reporting the highest voting record of all.[51] This particular criterion does not appear to have been followed up in later studies although it does appear that the concept of stability might have heuristic value in voting behaviour. In this connection it is worth noting that Dennis reports that residential mobility is also a factor in voting turn-out, the longer the residence, the more likely the individual is to exercise his vote.[52] A similar finding was also present in Birch and Campbell's study of a Lancashire constituency.[53]

Social Characteristics and Political Preference

The critical aspect of an election is the direction in which the voter casts his vote and it is in this expression of party preferences that social differentiation is, perhaps, most obvious. Since this study, however, is not concerned with political choice per se, it is sufficient to merely indicate some of the more common social characteristics that

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[50]Korchin, op.cit.; Angus Campbell and Robert Kahn, The People Elect a President (University of Michigan, 1952); H.F. Gosnell, "Participation in the Forthcoming Election," Ann. Amer. Acad. Pol. Soc. Scie. 1952, No.283, 156-160.

[51]Dennis, op.cit., 277.

[52]Ibid.

[53]Birch and Campbell, op.cit., 197-208.

serve to differentiate between party choices.

First, the nature of the choice. While the complexity implied by the large number of parties in many countries and in many different historical periods may appear at first to present inherent difficulties in general analyses there seem to be certain basic dichotomies that are always present at virtually every national election.[54] For example, the division of parties into left- and right-leaning appears to be characteristic of many elections, and this particular aspect of voting behaviour has received, perhaps, more than its fair share of attention.

American elections, according to Voting, tend to produce three main kinds of cleavage along party lines: 1) occupational and economic status, 2) religious and ethnic, 3) regional and urban-rural, and to these might be added those of age and sex.[55] The occupational differentiation is well known, with certain parties being explicitly "the workingman's party" or more overtly still, the "Labour Party." Similarly, minority groups and certain religious groups are traditionally associated with one or the other of the political parties. Such relationships are not necessarily spurious and explicable in variables of a lower order. For example, it might be argued that the traditional Catholic Democratic vote in the United States might be attributed to the fact that Catholics in general have a somewhat lower level of income than Protestants, and hence align themselves with the party line most appealing to the lower income groups. At least one study, however, demonstrates that the Catholic Democratic relationship still holds with income held constant.[56]

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[54]Lipset, et al., op.cit., 1134.

[55]Berelson, Lazarsfeld, and McPhee, op.cit., 54.

[56]Berelson, Lazarsfeld, and McPhee, op.cit., 54.

In fact, the significance of religion in voting preference is particularly well illustrated by Suchman and Menzel who demonstrate that allegiance to the party line is very much a function of the individual's religiosity.[57]

The relationship between political preference and voting turn-out is expressed in the result of the election and in cases where the turn-out is close to one hundred per cent, the political preference distribution approximates the direction of the vote. Where, however, there is a large number of absentee voters it becomes of importance whether there is a differential rate of turn-out between one party and another. For example, Cantril and Harding attribute the result of the 1942 election to a low Democratic vote, suggesting that had the Democrats voted according to the preferences existing in the population, they would have carried the election.[58]

Thus, while the terms "political preference" and "direction of vote" appear to be used interchangeably, such a use tends to obscure the fact that each variable has its own distinct population and distribution. That the distribution of these populations in terms of the various relevant social characteristics could be similar is not denied but where, for example, the total distribution of the opinion is not known and the voting turn-out is low, the pool of opinions existing within the total population is of obvious interest to the social scientist and, indeed, to the practical politician.

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[57]E.A. Suchman and Herbert Menzel, "The Interplay of Demographic and Psychological Variables in the Analysis of Voting Surveys," in Lazarsfeld and Rosenberg, op.cit., 148-155.

[58]H. Cantril and J. Harding, "The 1942 Election: a Case Study in Political Psychology," Public Opinion Quarterly, VII (1943), 238.

Explanations of Demographic Regularities

Sufficient evidence from the literature has been presented to show that the demographic approach is a valid starting place for any analysis of voting behaviour. The explanation of these statistical regularities, however, has generally taken the form of ex post facto generalisations. The paradigm of explanation is typified by the following model.[59]

1. A given social classification is found to be empirically correlated to a rate of behaviour (wheat farmers vote more than mixed or subsistence farmers).

2. The social categories as given are reinterpreted as indicating some more general attribute (wheat farmers are exposed to severe economic fluctuations, requiring government action to alleviate).

3. The attribute is related to the behaviour in question by a more or less general proposition (people exposed to problems requiring government action are more likely to try to influence government action, by voting, among other means).

Step two is obviously a special case of multi-variate analysis and ideally, the reinterpretation could be tested empirically by introducing a test variable into the analysis. In the above example this is precluded by the nature of the interpretation -- it would be difficult to find wheat farmers that were not subject to economic fluctuations or mixed farmers that were -- but generally speaking, as is well illustrated by Kendall and Lazarsfeld in their appraisal of The American Soldier, the data may permit the crucial test.[60] For example, the general interpretation that men vote more than women because they are more

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[59] Lipset, op.cit., 1128.

[60] Patricia L. Kendall and Paul F. Lazarsfeld. "Problems of Survey Analysis," in Robert Merton and Paul F. Lazarsfeld (eds.), Continuities in Social Research (Glencoe: The Free Press, 1950).

subject to social pressures could be tested by differentiating the men and women who were subject to social pressures. If sex differences held up within the categories of social pressures then it could be concluded that the general interpretation was a valid one.

Lipset lists four very general "explanatory propositions" that appear to fit most of the explanations of demographic regularities in voting behaviour.[61]

1. A group will have a higher rate of voting if its interests are more strongly affected by government policies.

2. A group will have a higher rate of voting if it has more access to information about relevance of government policies to its interests.

3. A group will have a higher rate of voting if it is exposed to social pressures demanding voting.

4. A group will have a higher rate of voting if the pressures to vote are not directed in different political directions so as to create conflict over which way to vote.

While the foregoing propositions are expressed in terms of voting turn-out, it will be seen that they are equally applicable to direction of vote and presumably to interest in the elections and campaign. They thus form an explanatory framework for the complex of political behaviour.

It should be noted, however, that such explanations need not be post facto but that, in fact, they may form the basis for prediction of relationships between social characteristics and voting behaviour. A case in point is fluoridation and in the following chapter which develops the research hypotheses, cognizance will be taken of

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[61]Lipset, et al., 1128.

particular and peculiar aspects of the issue itself which may serve to support, modify or change the hypotheses based on the literature.

CHAPTER II

HYPOTHESES WITH RESPECT TO THE FLUORIDATION PLEBISCITE AS A SPECIAL CASE OF VOTING BEHAVIOUR

The hypotheses developed in this chapter will be derived in the main from the literature reviewed in the foregoing chapter. The emphasis of this study is intended to be on testing generalisations relative to voting behaviour rather than on a study of fluoridation per se. In the same way, however, that a study of a presidential election is concerned with particular aspects of the Democratic and Republican vote, this study is also concerned with those who vote "for" and those who vote "against" fluoridation. For this reason, it is appropriate to review the literature relative to the study of fluoridation and to state the nature of the controversy that gives fluoridation certain unique characteristics as a plebiscite.

FLUORIDATION: THE ISSUE AND ITS LITERATURE

Fluoridation is the name given to the process of adding a controlled amount of fluorine to public water supplies with the intention of reducing the incidence of dental caries. Fluorine is effective only on teeth during the formation period, that is, in children up to the ages of twelve to fifteen. Unlike most public health measures, such as chlorination and D.D.T. spraying of mosquito beds which are initiated without reference to the public, and vaccination and tuberculosis X-rays which are voluntary on the part of the individual, fluoridation of a municipality's water often requires the approval of the public in a plebiscite. In the case of Alberta the etiology of the necessity

for a plebiscite appears to be somewhat obscure, for while a special committee set up in 1951 had drafted regulations that required formal application on the part of the community to the Provincial Board of Health accompanied by a copy of the municipality's by-law and letter from the local Medical Officer of Health, no mention was made of the requirement of a referendum. It appears that the requirement of a referendum was introduced in the interim period between the writing of these regulations and their final incorporation into the Public Health Act.[1] Alberta, however, is not unique in its specification that a plebiscite be held before the introduction of fluoridation, for plebiscites are required by other Canadian provinces, the United States, Australia, New Zealand and Great Britain and doubtless many other countries as well.

Further, it is noteworthy that the conduct of the campaigns preceding a plebiscite, the reasons given both "for" and "against" the issue and the timing of the propaganda appear to have followed much the same pattern whether the plebiscite took place in, for example, Hastings, New Zealand, Anglesey, Great Britain or Williamstown, Massachusetts, to name a few towns that have given accounts of their experience.[2] It might be suggested, then, that there is cross-cultural equivalence in a fluoridation plebiscite, the philosophy of the anti-fluoridationists in New Zealand being exactly the same as that in the United States. Thus, Taylor reports that the anti-fluoridation society

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[1]G. Clarke and C.R. Castaldi, "Fluorine, Fluorides and Fluoridation in Alberta," Canadian Journal of Public Health, LII (July, 1961), 290-96.

[2]For an account of a number of community experiences, see Gains and Setbacks, a collection of papers by the Committee to Protect Our Children's Teeth, Inc., New York.

in Hastings, New Zealand, "had ready access to anti-fluoridation literature originating in the U.S.A."[3] Since this statement in context hinted at international anti-fluoridation organisation it should, in all fairness, be pointed out that Taylor himself was in correspondence with pro-fluoridationist health officials in the United States. In any event, fluoridation is not a purely local and isolated issue but one that has significance for many communities. In addition, fluoridation might also be viewed as one facet of a syndrome of attitudes to public health since it may be that those who are opposed to vaccination, pasteurisation of milk and other health programmes may also be opposed to fluoridation. Elucidation of the formation of opinions on the latter may perhaps throw light on the formation of opinions on other public health issues.

The discovery that fluorine in water would reduce dental caries was first made in 1931, and according to Clarke and Castaldi "the University of Alberta was the first institution in Canada to carry out significant research on this subject."[4] Since that time the amount of research on fluorine and dental caries has assumed significant proportions and, generally speaking, the publications may be divided into three categories. On the one hand, there are those papers that report basic research on fluorine covering such topics as its chemical properties and physiological studies of its effects on animals. Secondly, there are clinical and field studies in which, for example, the rate of dental caries in an area with natural fluorine is compared with an area in which the water is lacking in this constituent. Finally, the resistance that fluoridation has encountered

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[3]Derek Taylor, "Fluoridation Comes to Hastings," New Zealand Medical Journal, LIV (February 1955), 3.

[4]Clarke and Castaldi, op.cit., 290.

has precipitated a large number of papers, although very little research, on such topics as appraisals of campaigns, ex post facto explanations of the failure of the plebiscites and lengthy accounts of the anti-fluoridation attitude.

It is, of course, with the latter area of the literature that the sociologist is concerned but since much of this consists of "armchair" expositions it is, for the most part, of heuristic value only. Thus, the listing of reasons for the anti-fluoridation attitude appears to be based on a content analysis of the anti-fluoridation propaganda rather than on studies of the subjective opinions of the population, while explanations such as that of the Mausners that the anti-fluoridation attitude reflects "the Zeitgeist, the current suspicion of scientists, the fear of conspiracy, the tendency to perceive the world as menacing,"[5] border on the psychoanalytic.

The literature, however, does report a number of public opinion polls which varied in their emphasis and findings. Thus, conducted by the Michigan Social Research Center, one nationwide survey focused on what people knew about fluoridation, finding that twenty-six per cent had never heard of it and that knowledge was related to education, use of mass media and family income.[6] Another national poll reported that fifty-three per cent of the sample were in favour of fluoridation compared to eighteen per cent against, while nearly thirty per cent did not know the direction

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[5]Bernard and Judith Mausner, "A Study of the Anti-Scientific Attitude," Scientific American, CXLII (February 1955), 39.

[6]Hillier Krieghbaum, "What the Public knows about Fluoridation," Oral Hygiene, IL (April, 1959), 56-60.

of their opinion.[7] The fact that a nationwide poll might include individuals who had not been exposed to a fluoridation campaign may have produced a higher "don't know" percentage than in a specific community where a plebiscite is under consideration. This is, in fact, borne out by at least two local studies, in Cincinnati and Detroit, where eighty per cent reported that they were in favour of the issue.[8] On the other hand, in the Mausners' study of Northampton, it appears that nearly fifty per cent of the sample could not be classified as either "for" or "against" the issue although the survey was taken just one week before the plebiscite.[9]

Other studies have differentiated those "for" and "against" fluoridation on a demographic basis. Thus, within the ecological framework, Galagan reports that those communities in which fluoridation has received acceptance are generally those that are "more wealthy," display a higher level of education, have a larger percentage of children under the age of fifteen and a low percentage of people over sixty-five.[10] Castaldi studied the distribution of the voting turn-out and direction of the vote by polling division in the 1957 and 1959 plebiscites in Edmonton and found that high turn-out and majority "pro" vote were associated with the higher socio-economic areas.[11] In their survey, the

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[7]D. J. Galagan, "Nature of the Fluoridation Controversy in the United States," Australian Dental Journal, IV (June, 1959), 149-155.

[8]Wm. Travis, "Does the Public Favour Fluoridation?" Detroit Dental Bulletin, XXVIII (May, 1959), 4.

[9]Mausner and Mausner, op.cit., 36.

[10]Galagan, op.cit., 154.

[11]Unpublished data, C. Castaldi, Faculty of Dentistry, University of Alberta.

Mausners report that high education and the percentage of children under twelve were associated with a pro-fluoridation opinion, while a low income, middle and lower class occupations and the older age groups appeared to typify the anti-fluoridationist.[12] That age is a cogent factor in opinions on fluoridation was well shown by a study comparing opinions and knowledge of fluoridation of a sample of young parents and a sample of older people over the age of sixty-five. Not only did the latter group display less knowledge about fluoridation but the percentage of expressions of "anti" feelings was considerably higher.[13]

In the same way, then, that Republicans and Democrats can be distinguished in terms of certain social characteristics, those that are in favor of, and opposed to, fluoridation appear to fall into certain social groups. Hypotheses as to the nature of these social groups can be made on the basis of the nature of the issue and of the previous research findings cited.

THE RESEARCH HYPOTHESES

The foregoing discussion on the literature on voting and the nature of the fluoridation issue has indicated four relevant dependent variables, namely, interest in fluoridation, opinions on fluoridation, voting turn-out in the plebiscite and direction of the vote. The hypotheses developed in this chapter will consider the distribution of each of these variables in terms of various social characteristics.

The Dependent Variables

Interest in fluoridation. Interest in fluoridation was defined for the purposes of this study as the individual's self-rating of his

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[12]Mausner and Mausner, op.cit., 38.

[13]Unpublished data, C. Castaldi, Faculty of Dentistry, University of Alberta.

interest based on a seven point scale with "one" inferring "very interested" and "seven," "not interested at all."[14] The seven point scale was used with the intention of subsuming the seven points into three main categories, "very interested," "moderately interested" and "not interested at all," for the purpose of analysis. This simple method of subjective scaling has been found effective by the Washington Public Opinion Laboratory since it gives the respondent a wide range of choice, obviating forced responses into undesired categories, while the seven point scale permits convenient combination of scale points for the purposes of analysis. A three category qualitative scale gives the respondent too few choices, while a five point scale presents problems in assimilation for the purpose of analysis.[15]

Opinion on fluoridation. Opinion on fluoridation is defined for the purposes of this study as the individual's response to the question, "how do you feel about fluoridation?" the respondent being required to indicate his response on a seven point scale with "one" representing "definitely for" and "seven" "definitely against." The scale, then, measured two dimensions: direction of opinion and strength of conviction. The middle category, "four" represented two aspects of a neutral position on fluoridation. First, it typified the individual who was completely indifferent to the issue and hence might be said to have no opinion at all and on the other hand, it represented the individual who had weighed the matter with some care and had concluded that in the face of controversial evidence he would not commit himself one way

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[14]For comments on the validity of self-rating see Lazarsfeld, Berelson, and Gaudet, op.cit., 41.

[15]Personal communication to Gordon K. Hirabayashi by Mrs. Edith Rainboth, Associate Director of the Washington Public Opinion Laboratory, University of Washington.

or the other. In this respect, then, the middle point of the scale was ambiguous and while for the purposes of development of hypotheses and analysis of the data the category has included both aspects under the title of "indifferent and undecided", it is recognised that strictly speaking, these two aspects are not comparable.

For the purposes of analysis, this seven point scale was abbreviated to a three point scale, responses "one" and "two" forming a category of "definitely for", responses "three, four and five" forming a category of "indifferent or undecided" and "six and seven" representing "definitely against". The justification of this method has already been discussed under the measure of interest but it should be noted that in the case of the opinion on fluoridation, the subsuming of responses of "five" and "three" under a middle category involves the transformation of opinion direction into a non-directional category. The uncertainty that is implied in these responses with respect to direction, probably justifies their inclusion with the "indifferent and undecideds".

Voting turn-out and direction of vote. These dependent variables were based on the individual's report as to whether he had voted or not, and in what direction he had cast his ballot.

The Dependent Variables and Social Characteristics.

Sex. Assuming that fluoridation can be classed as a public affair of the same order as presidential and other political elections, it can be predicted that men will be more interested in the issue than women and will display a higher voting turn-out. Similarly, if the stereotype of men as the decision and policy-makers of society is a valid one, men will be more likely to report definite opinions on

fluoridation than women. That is, women will display a higher proportion of "indifferent or undecided" responses. There appears, however, no reason to suppose that a sex differential should exist in the direction of the vote and in the distribution of "for" and "against" opinions.

Age. On the basis of previous election studies, interest in fluoridation and voting turn-out should increase with age with a tendency to decreased interest after the age of sixty. While this relationship formed the research hypothesis to be tested in this study, it should be noted at this time that the particular nature of fluoridation and its especial relevance to the younger groups, may tend to offset the relationship between maturity and interest and turn-out. The relevance of the issue to the younger age groups suggested that younger people will be more likely to be in favour of fluoridation, although older people may be more likely to have definitive opinions on the issue.

Age of children. If the relevance of an issue to a particular group has validity in the explanation of regularities in voting behaviour, then the parents of children under twelve will be more likely to be interested in the issue, to turn out to vote, to have definitive opinions on the issue and to be in favour of fluoridation than will those individuals with grown-up children or no children at all.

Education. Because of their presumed greater access to information, the higher educational levels will be more interested and display greater voting turn-out than those with fewer years of education. The greater access to information may tend to make for more definitive opinions in the better educated, while it would seem that educated people are more likely to be in favor of fluoridation since they are more likely to read, accept and identify with the rational, pragmatic

and prosaic type of evidence presented by the pro-fluoridation groups. The lesser educated, on the other hand, are more likely to be affected by the emotional appeals of the anti-fluoridationist.[16]

Socio-economic status. This particular characteristic presents certain problems in the demographic evaluation of the fluoridation plebiscite in Edmonton. First, as has been previously indicated, socio-economic status has, in previous studies, been measured by a number of indices. Since little is known about the social structure and stratification of Canadian society and Edmonton in particular, the meaning of socio-economic status in the context of fluoridation is somewhat nebulous. Nonetheless, the ecological data of Castaldi[17] suggested that socio-economic status as measured by an estimate of the residential prestige of the polling division, is a relevant factor in the differentiation of the distribution of the dependent variables. The crude indices of socio-economic status, income and occupation, have also been shown to be related to opinions on fluoridation as well as to voting turn-out and, in the absence of more refined indices of socio-economic status, hypotheses of this study will be framed in terms of income and occupational levels.

Whatever indices are used, the relationships between socio-economic status and the dependent variables of this study are difficult to explain. Thus, it would seem, for example, that those people who can least afford

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[16]Emotional appeals gain greater response than rational appeals, particularly in minority and under-privileged groups. G.W. Hartmann, "A Field Experiment on the Comparative Effectiveness of Emotional and Rational Political Leaflets in Determining Election Results," Journal of Abnormal & Social Psychology, XXXI (1936), 99-114.

[17]see footnote 11, this chapter.

dentists' bills would be more likely to be interested in and in favour of the issue and, in addition, to signify their interest by voting. The upper socio-economic levels, on the other hand, well able to afford dentists' bills might, in the face of controversy, simply avoid the issue altogether. The voting literature and the ecological studies previously cited suggest, however, that the reverse is actually the case and that the higher the occupational and income level, the more likely the individual is to be interested in and in favour of fluoridation, and to turn out to vote. This is somewhat ironical when it is considered that the dental health of the low socio-economic areas is significantly poorer than that of the "better" areas.[18]

Property Ownership.

It has been noted that stability of residence appears to be a cogent factor in voting behaviour although this factor has not been given much attention. Apart from the length of time that an individual has lived in the community, one possible index of stability is whether the individual owns or rents his home. In the case of the fluoridation plebiscite this question of home ownership has particular significance because of the regulations surrounding eligibility to vote at the municipal polls.

The regulations state that any property owner in the city may vote in the city elections regardless of citizenship or length of residence. If the individual is not a property owner, in order to be eligible to vote, he must:

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[18] C.R. Castaldi, et al., "Dental Health, Socio-Economic Level and Voting in Fluoridation Plebiscites," Unpublished paper, 1961.

a) be a Canadian or British subject, and

b) have lived in Edmonton since November the first in the year preceding the election.

But, while non-property owners conforming to the above requirements may vote on the mayoralty and aldermanic elections and on issues such as the fluoridation plebiscite, they are NOT permitted to vote on the money by-laws. Only property owners, that is city taxpayers, may vote on the money by-laws.

The restrictive nature of the electoral regulations may be said, therefore, to impose a limiting factor on the participation of non-taxpayers in the municipal elections. It would seem, then, that property owners would be more likely than non-property owners to be interested in the issue, to turn out to vote and to have a definite opinion on fluoridation. In terms of their inferred stability of residence, the property owners are more likely to be concerned as to whether fluorides were added to their water and, further, as taxpayers, they have a vested interest in the expenditure of taxes on such health measures. It is true that some renters are, in fact, permanent residents and that tenants pay taxes indirectly through their rents, but the annual payment by the property owner of a sum of money labelled city taxes would seem to make city affairs considerably more salient for the property owner than for the renter.

Relationships between the Dependent Variables.

As well as the foregoing hypotheses concerning relationships between the dependent variables and various social characteristics, certain relationships between the dependent variables themselves are of interest and significance in the study of the fluoridation plebiscite.

The finding in a presidential study that the greater the partisanship, the greater the interest[19] is easily transposed to the fluoridation plebiscite. Thus, it can be predicted that those who express definitely "for" and "against" opinions are more likely to express interest in the issue than are those that report that they are "indifferent or undecided" about fluoridation.

Since fluoridation is but one issue presented at the civic elections, the question might be raised as to the comparative degree of interest in fluoridation compared to the other issues such as the money by-laws, the aldermanic race and the mayoralty contest. In view of the extensive mass media coverage, the larger attendance at "fluoridation" meetings as compared to attendance at "candidates for council" meetings and the emotional nature of the issue,[20] it was predicted that fluoridation was of more interest than either the by-laws or the aldermanic race, that is, there would be fewer "not interested at all" responses in the case of fluoridation. Further, since interest in fluoridation is hardly likely to be an isolated phenomenon apart from interest in other public affairs, it seemed likely that those who expressed great interest in fluoridation would also be more likely to express interest in the other issues, and indeed in politics itself, than would those with no interest at all in the issue.

As in the case of voting behaviour at presidential elections, the greater the interest in fluoridation, the more likely the individual is to cast his ballot, while it can also be predicted on the basis of comparable findings in presidential elections that those that are

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[19]Berelson, Lazarsfeld, and McPhee, op.cit., 27.

[20]see Hartmann, op.cit.

definitely "for" or "against" fluoridation are more likely to vote than are those that are "indifferent or undecided". When, however, those that are "indifferent or undecided" do go to the polls, whether in response to interest to the other issues or in mere fulfillment of their voting "duty", the significant question arises as to direction in which they cast their vote. If the percentage of "indifferent and undecided" is as high as suggested by the Mausners' article and by the nation-wide polls previously mentioned, then the direction of this group's vote is obviously critical to the outcome of the plebiscite particularly where the criterion for passing is set at sixty-six and two-thirds per cent. The "indifferent or undecided" voter has three choices; he can vote "for", "against" or simply refrain from voting on the fluoridation issue at all, there being no obligation to vote on every issue presented at the municipal elections. He may decide to vote "against" on the basis that such a vote at least maintains the status quo -- the present situation of no fluorides in the water - but it seems unlikely that he would vote "for" fluoridation since this constitutes a positive response necessitating a decision implicitly in favour of the issue. It may, therefore, be predicted that when an "indifferent or undecided" individual goes to the municipal polls, he is more likely to cast his vote against fluoridation or to refrain from voting on the specific issue.

Finally, since voting at the fluoridation plebiscite is unlikely to be an isolated instance of voting behaviour, it may be predicted that those who report voting at the plebiscite are more likely to report voting at either or both of the previous federal and provincial elections than are those that do not report voting at the plebiscite.

SUMMARY OF THE RESEARCH HYPOTHESES

The research hypotheses are summarised in the following pages under the heading of each dependent variable. All hypotheses will be tested using the chi square test at the .05 level of significance.

Interest in Fluoridation

1. Men have more interest in fluoridation than women.

2. Interest increases with age up to the age of sixty, with a reversal in the trend after that age.

3. The higher the educational level, the greater the interest.

4. The higher the occupational level, the greater the interest.

5. The higher the income, the greater the interest.

6. Property owners are more likely to be interested than non-property owners.

7. Those with children under eighteen are more interested than those without children in this category.

8. Those who are definitely "for" or "against" fluoridation will be more interested than those who are "indifferent or undecided".

9. Fluoridation will receive fewer "not interested at all" responses than the by-laws, the aldermanic elections, and politics.

10. Those who express interest in fluoridation are more likely to express interest in by-laws, the aldermanic elections, and in politics.

Opinions on Fluoridation

1. There is no difference in the distribution of the direction of opinions on fluoridation between men and women, but men are more likely than women to have a polar opinion.

2. Older people are more likely than younger people to have an "anti" opinion on fluoridation and, in addition, are more likely to have a polar opinion on the issue.

3. Married people with children under eighteen are more likely to have a "pro" opinion and to have a polar opinion on the issue of fluoridation.

4. The more years of education, the more likely that opinion will be in favour of fluoridation and the opinion polar.

5. The higher the income, the more likely the opinion will be in favour of fluoridation and the opinion polar.

6. The higher the occupational status, the more likely the opinion will be in favour of fluoridation and the opinion polar.

7. There is no difference between property owners and non-property owners in the distribution of the direction of opinions on fluoridation but property owners will be more likely to have polar opinions.

Voting Turn-out

1. Men are more likely to turn out to vote than women.

2. Voting turn-out increases with age, with a tendency to reversal after the age of sixty.

3. The more years of education, the greater the turn-out.

4. The higher the occupational level, the greater the turn-out.

5. The higher the income, the greater the turn-out.

6. People with children under the age of eighteen are more likely to turn out to vote than people with no children in this age category.

7. Property owners are more likely than non-property owners to vote on the fluoridation issue.

8. The greater the interest in fluoridation, the greater the turn-out.

9. People with polar positions on fluoridation, whether for or against, are more likely to vote than those who are indifferent or undecided.

10. Respondents who report voting at the fluoridation plebiscite are more likely to report voting at either or both of the previous federal and provincial elections than are those that did not report voting at the plebiscite.

Direction of Vote

1. There is no difference in the distribution of the direction of votes on fluoridation between men and women.

2. The older the individual, the more likely that his vote will be against fluoridation.

3. People with children under eighteen are more likely to vote in favour of fluoridation than are those without children of that age.

4. The higher the education, the more likely the vote is in favour of fluoridation.

5. The higher the occupational level, the more likely the vote is in favour of fluoridation.

6. The higher the income, the more likely the vote is in favour of fluoridation.

7. There is no difference in the distribution of the direction of the votes for fluoridation between property owners and non-property owners.

8. Where people are indifferent or undecided about fluoridation but attend the municipal polls, they will be more likely to vote "against" or to refrain from voting on the fluoridation issue, than to vote in favour of fluoridation.

CHAPTER III

SOME HYPOTHESES CONCERNING THE ROLE OF RELIGIOUS AND POLITICAL GROUPS IN THE FORMATION OF OPINIONS ON FLUORIDATION.

While the hypotheses in the foregoing section with respect to the demographic characteristics of the fluoridation plebiscite were derived chiefly from the literature, other exploratory studies were conducted with a view to uncovering further profitable lines of investigation. The main focus of these studies was on perceptions of the issues and on major influences that led to the formation of opinions.

Informal meetings were held with members of the Edmonton Fluoridation Committee and with civic and provincial officials concerned with the issue. Strenuous attempts, however, to interview the leaders of the anti-fluoridationists met with no success. A number of doctors and dentists and some well-known anti-fluoridationists were interviewed and casual conversations and discussions were held with an accidental sample of citizens from many walks of life. The content of the mass media was examined in order to review the arguments "for" and "against" the issue and in this connection the various pamphlets in circulation at the time of the plebiscite and the "letters to the editor" in the Edmonton Journal were found particularly useful.

These exploratory studies suggested that, although the formation of an opinion on fluoridation appeared to be a process of choosing between two opposing sets of scientific evidence, the situation was actually somewhat more complex. While the voter had the choice of the appraisal of the pro-fluoridationists on the one hand that fluoride

was beneficial to the teeth and, on the other hand, the assurance of the "antis" that it was poisonous and tooth discolouring, neither of these alternatives was relevant to those who preferred to view fluoridation as an encroachment on their inalienable rights, to those who felt it could be done more cheaply by individual administration and to those who felt it was a plot of some kind on the part of the Communists to wreck the health of Western society. The question, then, was not necessarily a dichotomized choice between "good for the teeth" and "harmful for the teeth and health." In fact, it could be said that fluoridation appeared to be viewed by the voters in a variety of frames of reference in which the efficacy or otherwise of the drug could be either central or peripheral to the overall evaluation and voting decision.

The term "frame of reference" is used here in the sense originally defined by Sherif and Cantril to denote "the functionally related factors (both past and present) which operate at the moment to determine the particular properties of a psychological phenomenon (perception, judgment, affectivity, etc.),"[1] rather than the modified and more general usage of the term which has come to refer to the "general structuring that the individual tends to impose on a social field."[2] The focus on the term as originally defined rests on the orientation of the individual toward the stimulus or problem situation rather than on a descriptive approach to the general structuring of a situation. For example, an

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[1]M. Sherif and H. Cantril, "The Psychology of 'Attitudes' -- Part I," Psychological Review, LII (1945), 309.

[2]Wilbur Schramm, The Process and Effects of Mass Communication (Urbana: University of Illinois Press, 1955), 226.

individual who claimed that he was in favour of fluoridation because it prevented tooth decay might be said, in the general sense, to be employing a scientific frame of reference -- an evaluative judgment in scientific terms. On the other hand, his reason for holding this opinion might actually be the result of the influence of a friend or relative. In the latter case, the frame of reference is not a judgment within the scientific frame of reference but is rather the orientation of the individual in terms of the opinion of a subjectively meaningful person.

As has already been indicated, the potential frames of reference in which fluoridation can be viewed appeared to be numerous. During the exploratory studies, however, two frames of reference occurred with sufficient frequency to suggest that they might provide a significant and interesting orientation to a study of opinions on fluoridation. These two frames of reference, the political and the religious, were considered to be of special interest because of their traditionally close association with voting behaviour in general.

THE RELIGIOUS FRAME OF REFERENCE

Both in the mass media content and among the people that were interviewed during the exploratory studies, the theme that fluoridation constituted a violation of the "purity of God's water" occurred with sufficient frequency to suggest that fluoridation was, for some people, not a scientific issue but a religious controversy. This argument was offered not only as reason for an anti-fluoridation stand but it was also frequently perceived by those in favour of fluoridation as constituting a major reason why the plebiscites had failed. It appeared, then, that the anti-fluoridationist's religious beliefs could be orienting factors in his evaluation and perception of the issue. In

addition, for the pro-fluoridationist, a religious frame of reference was cogent to an explanation of the failure of the plebiscite.

The particular religions that were implicated in this way were, first of all, the fundamentalist Protestant religions. While any definition of "fundamental" in this context would embrace some church that did not wish to be so defined and exclude others that would classify themselves as fundamentalist, the general implication appeared to be that those churches that professed a "back to the Bible," evangelical and sectarian approach were the ones involved in the fluoridation issue. Specifically, such sects as the Pentecostals, Christian Science, Jehovah's Witnesses, Church of God, and Seventh Day Adventists were mentioned and it will be seen that common to all of these fundamentalist religions is the fact that each proscribes a way of life that is governed almost wholly by religious beliefs. It would seem not unlikely that such churches would be concerned with an issue such as fluoridation. The Christian Science views on fluoridation do not need to be elaborated here except to emphasise that the adherent's opinion on fluoridation is likely to be derived from tenets that are an inherent part of the church's doctrine. In actual fact, the Mother Church, the governing body of the Christian Scientists, took an explicit stand towards fluoridation, opposing it on the moral grounds that "forcing medical treatment on persons when it is contrary to their deepest religious convictions and practices was a violation of the spirit, if not the letter, of the first amendment to the Constitution of the United States."[3]

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[3]Donald R. McNeil, The Fight for Fluoridation (New York: Oxford University Press, 1957), 162.

The Catholic faith was another religion that was sometimes implicated as influencing opinions on fluoridation. Although as far as is known, the Catholic Church had never taken an explicit stand on the issue of fluoridation, there appeared to be evidence that certain plebiscites in the United States had been influenced by the intervention of Catholic priests who, holding "anti" opinions, had successfully "converted" their parishioners.[4] It would seem that there is nothing specifically within Catholic beliefs that would predispose a Catholic toward an "anti" view, although the Church's attitude toward issues such as contraception, sterilisation and similar topics might be extrapolated by both Catholic and non-Catholic to an "anti" stand on fluoridation.

THE POLITICAL FRAME OF REFERENCE

During the exploratory studies, the implication that the Social Credit party was influential in biasing people's opinions, and hence the outcome of the plebiscite, against fluoridation was frequently heard. The bases of this political influence, which received some confirmation in conversations with an accidental sample of adherents of the party, are several.

First, the Social Credit party has been in power in Alberta since the early 1930's and currently enjoys a majority in the Provincial Legislature of sixty-one to four seats. It seemed not unlikely that if, in fact, the Social Credit party was explicitly opposed to the issue, its influence would be quite substantial.

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[4]C. Castaldi, personal communication. Reference unavailable. A Catholic newspaper in La Crosse, Wisconsin, explicitly opposed fluoridation in an editorial. Many Catholics in La Crosse criticized the article. See McNeil, op.cit., 196.

Secondly, the party is explicitly based on fundamental religious principles and this particular facet of their policies and administration is well known and publicised. The Premier of the province, for example, conducts well-attended Sunday services in one of the larger down-town theaters. The possible relation between fundamental religion and "anti" opinions on fluoridation has already been discussed and, again, it is not unreasonable to predict that this point of view could be attributed to the Social Credit party.

Thirdly, the majority required for the passing of the plebiscite was established by the Provincial authorities under the Public Health Act as sixty-six and two-thirds per cent rather than the fifty per cent typical of democratic practice. It is perhaps to be expected that this could be interpreted as indicative of resistance on the part of the government to the addition of fluorides to the water supply. In this connection, an editorial of The Edmonton Journal is particularly cogent:[5]

> .....Alberta's Social Credit Administration has loaded the dice against fluoridation. The Act passed by the Legislature requires a 66 2/3 per cent affirmative vote for fluoridation.
>
> Until recently such a negation of democracy could have been taken to reflect the views of the wing of the party which consistently opposes fluoridation as a matter of doctrine. However, earlier this month, when a group of Social Crediters in Eastern Canada condemned fluoridation, among other things, Premier Manning said this group was "repudiated" by the national party years ago. He termed them "erratic" and taxed them with having been "rabidly anti-semitic" at one time.

Whether or not people did perceive the Social Credit party as taking a stand on the issue is an empirical question with which this study is concerned.

Although the Social Credit party does not explicitly take a stand on fluoridation, there are minor or splinter groups both within and without the party that are vociferous in their "anti" attitude.

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[5]Editorial in The Edmonton Journal, September 13th, 1960.

Several Alberta Members of Parliament have appeared in both the press and public meetings as being definitely opposed to fluoridation, while it is understood that at a recent party caucus in Alberta there was considerable intra-party strife over whether fluoridation should be subject to merely a simple fifty per cent majority vote in municipal plebiscites. It is believed that the present status of the plebiscite regulations was maintained to avoid dissension within the party.

It would seem, then, that it was inherently possible that Social Creditors could perceive their party as taking a stand on the issue, while the pro-fluoridationists' argument that the Social Credit viewpoint was damaging to the outcome of the plebiscite might well be based on objective fact rather than representing a rationalization. Certainly, party influence on a non-political referendum is not without precedent. According to Lazarsfeld and Franzen, it is well known that referenda on wet issues were always correlated with party vote, the anti-prohibitionist line being an implicit, if not explicit, part of the Democratic platform.[6] The problem, as Lazarsfeld and Franzen point out, is in determining the sequence of relationships between two variables such as political affiliation and attitudes towards liquor consumption.

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[6]Paul F. Lazarsfeld and Raymond H. Franzen, "Prediction of Political Behavior in America," American Sociological Review, X (1945), 261-273.

DEVELOPMENT OF THE HYPOTHESES

Using the exploratory studies as a starting point, a number of hypotheses were developed relative to the political and religious frames of reference. First of all, from the demographic viewpoint, it seemed that there was inherent justification for hypotheses that differentiated the distribution of opinions on fluoridation in terms of political and religious preferences. On the basis of the exploratory evidence it was predicted that those respondents expressing a preference for the Social Credit party would be more likely to vote against fluoridation and to be opposed in their opinions than would those that expressed preference for other parties. Similarly, those expressing preference for a fundamentalist religion would be more likely to express an "anti" opinion on fluoridation than other Protestant religions and Catholics would also be more likely to be opposed than Protestants,(excluding Fundamentalists).

Assuming that the demographic differences predicted above were found to hold true under test, the question was asked whether such differences were explicable in religious and political terms or could be better explained with variables of a "simpler" order. For example, a demographic difference in terms of opinions on fluoridation between Fundamentalists and other Protestants might well be explained by the fact that Fundamentalists, generally speaking, have a lower socio-economic status than Protestant groups such as Anglicans and hence education or income might be the more appropriate explanatory variable. If, on the other hand, the Fundamentalist derived his "anti" opinion from the directive of his minister or from a specific orientation point of his religion (as appears to occur in the case of the Christian

Scientist) and the Social Crediter followed his interpretation of his party's stand on the issue, while the Conservative had no such reference point, it could be said that the differential distribution of opinions on fluoridation could be accounted for in religious or political terms.

The exploratory studies suggested that the Social Crediter, the Fundamentalist and the Catholic were deriving their opinions from their party or church -- that they were adopting their norms with respect to fluoridation from these significant groups. If this were the case, then, the respective groups could be classified as reference groups in the formation of anti-opinions on fluoridation. To test the hypothesis that these particular groups were reference groups presented intrinsic problems mainly on account of the fact that the study was taking place some years after the issue had been placed before the public and some six months or more after the most recent campaign and plebiscite. There was, therefore, no established baseline of opinion and no opportunity to observe change as in the case of a panel study. For this reason, a compromise was reached which asked questions relevant to the establishing of a group as a reference group but which did not permit of this interpretation without qualifications. It was rather the intention of the study to establish the cogency of the political and religious frames of reference to opinion formation with respect to fluoridation.

A prerequisite to the adoption of norms on a particular subject from a significant group or person is that that group or individual be perceived as taking a stand or holding views upon that particular subject. It was predicted, therefore, that Fundamentalists and Catholics would

be more likely than (other) Protestants to perceive their church as taking a stand on the issue. Further, the perceived stand would necessarily be congruent to the perceiver's own.

The difficulty with respect to acceptance of the perception of a congruent stand on the part of a favoured religion or party as evidence that the church or party constitutes a reference group from which norms on fluoridation are taken, is that such a perception could, in fact, represent a projection or assignment of the perceiver's own opinion to a group with which he identifies. This particular phenomenon has been marked in voting studies where it has been found that "the closer the voter is to a group socially, the more he 'pulls' the group into similar proximity politically."[7] In the case of fluoridation, however, there is no more reason why a Social Credit adherent should assign an anti-stand to his party than a Conservative assign a pro-stand to his, assuming their identification with their respective parties is identical. Nevertheless, the alternative explanation somewhat tempers the conclusion that a perceived congruent stand demonstrates a reference group.

While the perception of an individual's own party has been viewed chiefly in the context of the formation of an anti-opinion, the exploratory studies suggested that the perception of the stands of the Social Credit party and the respective religions by non-members of these groups constituted an explanatory frame of reference for the failure of the plebiscite. In other words, while the formation of a "pro" opinion was not likely to be derived from political or religious sources, the rationalization or explanation of the failure of the plebiscite

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[7]Berelson, Lazarsfeld and MacPhee, op.cit., 81.

could be effected through a political or religious frame of reference in which "anti" stands were attributed to minority out-groups. Voting studies also report similar findings, with people hostile to religious and ethnic groups being more likely to assign them to the opposition party.[8] The explanation offered in this connection was that the perception of the opposition stand of the out-groups constituted a "generalization" of hostility toward those groups rather than a displacement of electoral frustrations or anxieties. While this alternative explanation of an incongruent perception of an opposing group's stand suggested that the explanation of "rationalization" should, at the most, be tentative, the present study was more immediately concerned with whether most pro-fluoridationists with Conservative or Liberal preferences perceived the Social Credit party as holding opposed opinions or whether this perception was peculiar to a certain segment who were interested in explaining the outcome of the plebiscite with a view to the conduct of future campaigns. In any event, the hypotheses that Conservatives and Liberals were more likely to perceive Social Credit as taking a stand on fluoridation than Social Crediters were to perceive other parties as concerned with the issue, and that such perceptions would be incongruent to the perceiver's own stand, seemed justified.

During the exploratory studies and the pretest of the schedule, respondents were asked whether they thought their church or political party took a stand on the fluoridation issue. To judge by the replies recorded by the interviewers, this question often produced a strong and sometimes emotional reaction. A negative response was frequently

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[8]Ibid., 183.

accompanied by an expression of the opinion that fluoridation has nothing to do with the church but just as frequently, respondents felt that the church should give leadership to the people on this question. These responses seemed to be an index of the perceived cogency of religion and politics to the issue of fluoridation and in the survey itself a question was added as to whether the respondent felt that political parties and churches ought to take a stand on the issue. A negative response to this question could be interpreted as a rejection of the relevancy of politics and religion as reference points in terms of the formation of the respondent's opinion on fluoridation, although such a response would not preclude a perception of others being influenced by these institutional spheres. A positive response could be interpreted as a willingness to accept pronouncements of the party or church on the issue.

While this "ought" question was formulated on an exploratory basis from clinical impressions of the pretest and with no particular theoretical orientation, it seemed that the members or adherents of those same groups that were suggested earlier as being more likely to be perceived as taking a stand on fluoridation, would be more likely to say that their church or party ought to make a pronouncement on the issue. Thus, adherents of the Social Credit party, whose philosophy embraces considerably more than what is generally recognised as the field of political government, may be more willing to accept intervention of their party in a non-political issue than, for example, the adherents of the Conservative and Liberal parties. The latter parties' activities are comparatively politically conventional and to the extent that the parties' influence radiates from Ottawa rather than from a local centre they would appear less likely to be perceived as concerned with local issues.

Similarly, the Catholic church which might be said to have a totalitarian influence over the lives of its practising members, and the Fundamentalist churches which encourage a religion that actively governs the life space of its adherents, may be more likely to be accepted as authorities on fluoridation than churches which confine their activities to moral and religious spheres.

Perhaps the simplest measure of the influence of religious and political institutions on the formation of opinions on fluoridation is the subjective expression as to whether these are important to the individual or not. In the Erie County study, respondents were asked which of a number of sources such as relatives, friends, business associates caused them to form their judgment on which way to vote,[9] while in the Voting study it was asked which of a number of groups such as union, religious group, lodge, etc., were important to the respondents.[10] A question, then, which asks the respondent which of a number of sources, including religious and political preferences, was influential in crystallising his opinion on fluoridation, should provide a simple, if crude, index of the relative influence of religious and political groups. On the basis of the exploratory evidence, it was hypothesised that those expressing preference for Catholic and Fundamentalist religions and/or the Social Credit party would be more likely than other respondents to ascribe importance to their political and religious affiliations in the formation of opinions on fluoridation.

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[9]Lazarsfeld, Berelson and Gaudet, op.cit., 171.

[10]Berelson, Lazarsfeld and McPhee, op.cit., 358.

Summary

Four particular aspects were seen as testing the cogency of the political and religious frames of reference to the opinions on fluoridation.

First, there was the demographic approach in which it was predicted that significant differences would be present in the distribution of "for" and "against" opinions according to religious and political preferences.

Secondly, it was predicted that those with certain religious and political preferences would be more likely to perceive either their own or opposing groups as taking a stand on the fluoridation issue, the stand being congruent or incongruent respectively to the perceiver's own.

Thirdly, the individual's opinion as to whether churches and political parties ought to take a stand showed the cogency of the political or religious frame of reference to the individual and also indicated a value judgment on his part as to whether fluoridation should rest in the hands of non-scientific agencies.

Finally, the individual's acknowledgment that his church and/or political party was important to him, provided a simple index of the relevance of these group memberships to the fluoridation issue.

CHAPTER IV

METHOD AND PROCEDURES

The data were gathered by trained interviewers using a standardised structured schedule from a random sample of the residents of the City of Edmonton, during the period from June 1960 to October 1960. This method was chosen in order that generalisations might be made to the population of the City of Edmonton and, since the study was considered to be on an exploratory basis, it was hoped that the interview method would prove productive of fresh insights in addition to the testing of developed hypotheses.

THE INTERVIEW SCHEDULE

The schedule experienced five revisions based on test sessions in which students in social psychology and research methods took the part of critical respondents and interviewers. These sessions were chiefly concerned with the framing of the questions in terms of the hypotheses being tested and with the anticipation of problems of communication with the respondent in the field.

A copy of the schedule in its final draft is found in Appendix A.

THE PRETEST OF THE SCHEDULE

Interviewer Selection and Training

Seventy-nine students were recruited from classes in Introductory Sociology, Social Psychology and Research Methods as supervisors and interviewers, participation in the project being an alternative

to a formal term paper.

The interviewers were given approximately four hours of lectures on interviewing technique and problems and took part in four hours of training in a small group situation under the direction of their supervisors. The supervisors had received four hours of additional training on the schedule and were responsible for approximately nine interviewers each.

The teams had one day's experience in interviewing and supervising on a readership survey conducted in a rural area for the Canadian Weekly Newspapers' Association, a week prior to the pretesting of the schedule.[1]

Pretest Sample and Pretest Survey

There were one hundred and seven polling divisions in Edmonton in October 1959. A random sample of twenty-five per cent of these divisions was drawn. From these twenty-seven areas, six to eight blocks were randomly chosen. Interviewers were supplied with two block addresses, delimited by streets and avenues and were requested to choose any one household from each block. In order to decrease a disproportionate number of housewives in the sample, interviewers were instructed to interview one male and one female.

The schedules were edited by the supervisor before being returned to the directors of the project, each supervisor being responsible

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[1]L. Ray Silver, "A Readership Study of a Canadian Weekly Newspaper" (Mimeographed report to Canadian Weekly Newspapers Association, July, 1960), 5-7.

for the collation of the comments and remarks of the interviewers relative to their experience.

Two schedules were returned by each interviewer and one by each supervisor, making a total of one hundred and fifty pretest schedules.

The pretest took place over a five day period beginning March twenty-sixth, 1960.

Analysis of Pretest

Coding, tabulation and cross-tabulation took place during May 1960, and on the basis of this data, categories of response were set up for "open-end" questions. The wording of other questions was changed to meet interviewers' suggestions and criticisms.

THE SURVEY

The Population

The population, for the purposes of this survey, was defined as the residents, twenty-one years and over, of the City of Edmonton. Residence was defined by excluding individuals on vacation, transients and other temporary visitors. Length of residence was not considered a criterion.

The Sample

The size of the sample drawn was governed by the amount of money available and by the decision to adhere to a strict random sample. Quota or other methods of sampling than that employed may have produced a larger sample for the same money but, in the interest of generalising to the population, the size of the sample was sacrificed for the sake of strict random conditions.

The final sample consisted of three hundred and seventy-four cases, a .23% sample of a population of 162,523, as of October, 1959.

Sampling Method

The sample may be defined as a multi-stage combined area and simple random sample.

Stage one. In October, 1959, the City of Edmonton was divided into one hundred and seven polling divisions which approximated the various local communities. It was suspected that a great deal of homogeneity existed within the polling divisions with respect to income, occupational level and social class. For this reason, a large sample of fifty per cent was taken, making fifty-four polling divisions in all. It was later found that one polling division was still in the process of construction, with very few completed houses and impassable roads. This polling division was dropped from the sample.

Stage two. In this stage, the number of blocks in each selected polling division was designated as the sub-population and ten blocks from each polling division were selected by random sample.

The selection was made by numbering each block in a polling division on a large scale map and then selecting ten blocks from a table of random numbers.[2]

Blocks known to be schools, parks or industrial property were omitted from the sub-population. Where blocks were inordinately large, as frequently occurred in the case of crescents, such blocks were arbitrarily divided at lanes or at points at which the block changed

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[2]Table 1.2 in George W. Snedecor, Statistical Methods (Ames: The Iowa State College Press, 1946), 10-12. These tables were used throughout the project for the selection of random samples.

direction.

Stage three. The number of lots in each selected block constituted the sub-population in this stage. Two lots were selected from each block by random sample, the first lot selected falling in the sample, the second being designated as an alternate. In the selection process a large scale map was used and in cases where the map showed the blocks with the lots already numbered, the map numbering system was followed; where numbers were not given, a consistent method of numbering the lots was adopted, namely, in a clockwise direction beginning in the north west corner of the block.

The lots were described according to streets and avenues; for example, "the fourth lot north of 120th Avenue on the east side of 125th Street." The lots were then located *in situ* by interviewers and the addresses recorded. Vacant lots, lots occupied by stores, factories and other buildings obviously not dwelling places were dropped from the sample and their alternates used.

Stage four. The lots were redefined as dwelling houses and the sample of dwelling houses was made up according to a *pro rata* allocation among the polling divisions based on the number of residents, 21 and over, as in the Civic Census of 1960.

Prelisting. Stages five and six comprised the prelisting phase of the sampling method. Prelisting in most cases was done in advance of the interview, the object being to facilitate the interviewer's task by establishing a convenient time for the interview. In practice, this proved to be of little advantage and in the latter stages of the project, the interview was completed at the same time as prelisting if the appropriate respondent was available.

Although a standard introduction was available for the use of the interviewer on the prelisting sheet, interviewers were encouraged to use their initiative in gaining admission and establishing rapport. The interviewers reported that a particularly successful approach was to ask the individual answering the door the questions relative to the number of households in the dwelling place and the number of people in the household without any initial introduction. Apparently the citizens of Edmonton are used to the usual census-type questions, whereas a more formal introduction gave them the opportunity to refuse.

Stage 5. The interviewer ascertained the number of households in the dwelling place and selected the appropriate one by reference to the prepared random numbers listed on the pre-listing sheet. For the purposes of selection the households within a dwelling house were numbered by the interviewer in accordance with a standardised procedure that began on the main floor, on the left of the front doorway and at the back of the house, counting from left to right in a clockwise direction. Second and higher floors were counted in a similar manner and lastly the basement was counted. In the case of large apartment blocks with more than six households, the prelister carried a prepared list of random numbers suitable for numbers of households up to twelve. Above this the interviewer was required to telephone the supervisor.

A household was arbitrarily defined for the purposes of the survey as any group of individuals taking one or more meals together each day. Thus, boarders were included within the household while roomers were accorded the status of an individual household.

Stage six. From the population of individuals over twenty one, living in the household, the respondent was selected by reference to the

list of random numbers on the prelisting sheet. For the purposes of selection the household members were numbered, the oldest being designated number one. No substitution was permitted within the household, the designated one being the only individual that could be interviewed.

The Interviewers.

Selection and Training. The prelisting and interviewing team was recruited from two sources.

First, a number of students who had taken part in the pretest of the schedule were engaged on a paid basis for the survey. They were given instruction on the prelisting procedure and on the revised schedule. These interviewers were working on a part-time basis and were paid, initially, at an hourly rate plus travelling expenses. This was found unsatisfactory from the point of view of expense and performance and a subsequent change to a per schedule basis was more satisfactory with no noticeable deterioration in the quality of interviewing as measured by the number of errors and omissions and amount of peripheral material gathered.

Secondly, a shortage of funds and a lack of productivity on the part of the paid interviewers prompted the recruiting of a summer school class in introductory sociology. These students, sixty in number, were assigned one interview as part of their course work and on the basis of their performance and their appraisal of the experience, they were to receive a grade. Training of these interviewers followed the pattern carried out with the class during the winter and it included four hours of class instruction, a demonstration interview and a practice interview prior to the actual interview experience.

Performance. Generally speaking, the interviews completed by the summer school students were superior to those of the paid interviewers. This is, of course, a clinical impression rather than an empirical fact, but at least three relevant criteria can be distinguished.

1. More persistence appeared to be shown by the summer school students in the "tracking down" of the appropriate respondent. This may have been a result of the more flexible hours of this group since the paid students were generally engaged in other work throughout the day. Further, the time limit imposed on the assignment of the summer school students no doubt contributed to the persistence of these students.

2. The schedules of the summer school students appeared to be completed with fewer omissions and inconsistencies. Since the interviewer's grade depended in part on clerical accuracy, whereas payment for the schedule was made to the paid interviewer regardless of this criterion, this difference is, perhaps, to be expected.[3]

3. The most outstanding difference between the two groups of interviewers appeared in the amount of peripheral and related material recorded by the summer school students. Many of the students attached a report to the schedule containing a life history of the respondent and verbatim remarks relevant to the various questions. The "probing" technique of these interviewers seemed more effective than that of the paid interviewers.[4]

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[3]This difference in clerical accuracy between paid and student interviewers has been noted in Washington State census projects. E.H. MacCannell, personal communication.

[4]A quantitative comparison of the amount of "probing" material recorded by paid and student groups of interviewers has been made by one investigator, the student group being the more effective in this area. Robert L. James, "Age and Sex Factors in Relation to Interviewer Success among Ninety Seven Volunteer Interviewers," paper read at the Conference of the Pacific Sociological Association, April 1959.

It should be pointed out, however, that the paid interviewers were selected on the basis of their availability rather than on the basis of their performance on the pretest. Further, where the paid interviewer was engaged full-time on the project, the productivity and effectiveness was considerably greater than that of the part-time interviewers. Calculated on a per schedule basis the full time interviewers were also cheaper than the part-time interviewers.

Further, the summer school class consisted, for the most part, of teachers completing requirements for their degree. As a group they were older, more mature and, perhaps, more serious in their approach to the assignment. The paid interviewers, on the other hand, were chiefly first or second year students who were involved in the project for the monetary reward rather than for continued interest in the project itself.

Interviewer supervision. Regular times were appointed for the return of the schedules. Completed schedules were edited with the interviewer present in order that errors and omissions could be corrected or the schedule returned for subsequent completion.

Interviewer Reliability Check. Eighteen completed schedules were selected at random and a call made at the house to check whether, in fact, the individual purported to be interviewed had actually been interviewed and that the method of prelisting and selection of interviewee had been followed. No discrepancies were found.

Interviewer Bias. All of the paid interviewers indicated attitudes in favour of, or indifferent to, fluoridation on the basis of a simple questionnaire administered prior to the pretest of the

schedule. This questionnaire was not given to the summer school class but during the editing of their completed schedules, the interviewer was asked his or her opinion on the issue. In all but two cases were these interviewers in favour of fluoridation.

Proper emphasis was given in interviewer training to the necessity of impartial administration of the schedule but with so few interviewers "against" the issue it was not possible to compare the responses made to pro-fluoridation interviewers with those made to anti-fluoridation interviewers. The bias, then, cannot be measured but it should be noted that any bias in the recording and interpreting of interviewees' responses would likely to be of a systematic nature.

Replacements and Mortalities

The interviewers received instructions to make four "call-backs" before returning the assignment for replacement. In actual practice, where it was thought possible to eventually obtain the interview, persistence was encouraged rather than strict adherence to the limit of "call-backs". The summer vacation season and the mobility of the male population engaged in summer seasonal work no doubt contributed to difficulties in tracking down the "not-at-homes".

An analysis of the mortalities is displayed in Table I and it will be observed that while a total of sixty-six interviews was not completed for a variety of reasons, forty nine of these were replaced by alternates. The interviews finally lost to the sample were not replaced because either all the alternates in a particular voting division had been used or, in the case of the interviews lost because of language difficulties, the decision was made to drop these without replacement.

TABLE I

REFUSALS AND OTHER MORTALITIES

	Replaced	Lost to sample	Total
Point-blank refusal*	30	4	34
Interviewee never home (e.g. oilfield worker, salesman etc.)	3	4	7
On vacation	3	1	4
Language problem;			
Hungarian	1	2	3
Yugoslavian	1		1
Danish	1		1
Italian		2	2
Chinese		3	3
Moved after prelisting; no new occupant	2		2
Empty House	7	2	9
Total	48	18	66

* Seven of these were experienced at the prelist stage of the study.

Refusals. The number of interviews lost because of refusals reflects only a proportion of the total difficulties experienced by the interviewers in gaining admission. Where the interviewer met with a point-blank refusal a more experienced interviewer or one of the supervisors endeavoured to complete the interview. While no records were kept of this procedure a large number of interviews were recovered in this fashion. In only one case was a telephone call made to the University to validate the authenticity of the interviewer, although one respondent called the police. The same interviewer was involved in both of these cases.

Twenty five of the refusals were in voting divisions that might be generally described as working class or lower levels of housing, the other nine occurring in middle class and better areas. In those cases where prelisting had taken place prior to refusal, seventeen of the refusals were by women and nine by men, with ages distributed over the range from twenty six to eighty three.

The most common reason given for refusal was "I am not interested", while senility and poor health were other excuses offered.

Language difficulties. It had been anticipated that the interviewers would run into language difficulties because of the ethnic diversity of the population of Edmonton and instructions were given that in no case was the interviewer to conduct an interview through an interpreter drawn from the household. All language problems and communication difficulties were to be reported to the supervisor in order that an interviewer conversant with the appropriate language could be assigned to those interviews. In actual fact twenty-one completed schedules record interviews that were carried out under communication

difficulties, involving seven different languages[5].

Nine interviews were carried out by interviewers who spoke the necessary language, two in Ukrainian, five in German and one each in Polish and French. The latter two interviewers were members of the regular interviewing team while the Ukrainian and German interviewers were trained specifically for the interpreted interviews. The necessity of training interviewers who had not in any way been associated with the project prompted the decision to accept as mortalities those other interviews that would have required the training of an interviewer familiar with the appropriate language.

PROCESSING OF THE DATA

Punching. The schedules were punched onto I.B.M. punch cards. The punching, however, was not verified, it being considered that, since the punching process was slow, owing to the awkward arrangement of the schedules, punching errors would be unlikely to occur. The operator was very experienced. Further, it was considered that subsequent sorting of the cards would reveal some of the punching errors that might be made in the form of "impossible" categories. That is, where the highest coding used on any one item was, for example, five, any number punched above that number would reveal itself on sorting as a punching error. Further, since many of the codes were dependent on previous responses, errors made in the punching would show up in the sorting.

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[5] Ukrainian, German, Polish, Hungarian, Dutch, French and Italian.

For example, where the respondent had claimed not to have voted on the fluoridation issue, subsequent coding of the question as to the direction of the vote was, of necessity, not applicable or code five. Any other code number would clearly be an error. In actual practice, only one or two errors were found.

Sorting. An I.B.M. 088 sorting machine was used and the cross tabulations recorded on work-sheets.

CHAPTER V

THE FLUORIDATION PLEBISCITE AS A SPECIAL CASE OF VOTING BEHAVIOUR.

This chapter reports the results of the study with particular reference to the hypotheses developed within the demographic frame of reference in Chapter II. Each social characteristic, in turn, will be discussed in terms of the relevant dependent variables, interest in fluoridation, opinion on fluoridation, voting turn-out and direction of vote. These results will then be summarized under the heading of each dependent variable with the addition of certain methodological comments and a discussion of the relationship between the dependent variables.

SOCIAL CHARACTERISTICS AND THE FLUORIDATION PLEBISCITE

Sex

The general hypothesis that sex is a cogent factor in voting behaviour does not appear to be supported by the analysis of the relations between sex and the various dependent variables in the fluoridation plebiscite. In fact, as can be seen from Table II there is very little difference between men and women in terms of their expression of interest in fluoridation, opinion on fluoridation and voting turn-out.

In the case of "interest," there is a non-significant tendency towards more women than men being very interested in fluoridation, thirty-five per cent of the men being very interested in the issue compared to forty-one per cent of the women. The generalization that men are generally more interested in public affairs than are women does not seem to hold for the fluoridation issue. Whether this can be

TABLE II

PERCENTAGE[a] DISTRIBUTION OF INTEREST IN FLUORIDATION, OPINIONS ON FLUORIDATION, VOTING TURN-OUT AND DIRECTION OF VOTE ACCORDING TO SEX OF RESPONDENT

Dependent variable	Sex	
	Male	Female
Interest in fluoridation:		
Very interested	35	41
Moderately interested	47	46
Not interested at all	18	13
Total	100	100
(N)[b]	(186)	(170)
Opinion on fluoridation:		
Definitely for	47	47
Indiff. or undecided	36	36
Definitely against	17	17
Total	100	100
(N)	(185)	(169)
Voting turn-out:		
Voted	46	42
Did not vote	54	58
Total	100	100
(N)	(142)	(181)
Direction of vote		
Voted for	66	63
Voted against	34	37
Total	100	100
(N)	(76)	(65)

[a]All percentages are rounded to the nearest per cent.

[b]The number of cases within a dependent variable does not always add to the full total of the sample of 356 because of the ommission of those respondents who did not fall into the categories represented or from whom the relevant information was not obtained. (in the case of "direction of the vote" the full total is 141).

ascribed to the inherent nature of the fluoridation controversy, the fact that it is a local rather than a national issue, or to a different status of women in public affairs in Canadian society (as compared to American society) is largely a matter of speculation. Certainly women are traditionally associated with the health and care of children and it may well be that fluoridation has particular salience for the mother. Thus, while federal affairs and federal politics may be the province of the male, explicitly or otherwise, fluoridation as an important aspect of children's welfare is very much within the wife and mother's domain.

As predicted, the distribution of opinions for and against fluoridation according to sex is not significant and the relationship between interest and sex is reflected in the fact that men and women give an equal number of "indifferent and undecided" responses. This is contrary to the prediction that more men than women would offer definitive opinions on the issue and may be explicable in terms similar to those expressed in connection with interest.

Contrary to expectations, there is very little difference between the sexes in the rate of their voting turn-out, just over forty-five per cent of the males reporting voting compared to forty-two per cent of the females. While this difference is in the anticipated direction it is not significant and the hypothesis that men have a higher voting turn-out than women must be rejected, at least for the Edmonton fluoridation plebiscite. Whether this particular finding is also true of federal and provincial elections is a question that could only be answered by further analysis; the results of such an anlysis might throw light on possible explanations mentioned in connection with the finding of equal interest of both sexes in the fluoridation plebiscite.

It is of interest to note that married respondents display a higher voting rate than single respondents and, in fact, higher than widowed, divorced and separated respondents. While these differences are not significant, the trend suggests that the equalization of sex rates in voting turn-out may be due to husband and wife voting together. It is true that ostensibly there is no more reason why married people should vote together at municipal elections and plebiscites than at provincial, federal or presidential elections but, in the case of the municipal elections where property ownership is prerequisite to certain voting privileges, the joint ownership of houses might be a factor in influencing the sex make-up of the voting turn-out. Again, specific to fluoridation, it might be argued that women by virtue of their relationship to children have greater pressures to vote than in a national election not only from the saliency of the issue itself but from the fact that children's health is inevitably a conversation topic among women; hence pressure may be exerted from the woman's social circle.

Age

It will be seen from Table III that the relationship between age and interest in fluoridation is somewhat more complex than that suggested by the hypothesis that interest increases with age. In fact, the idea that the greater relevance of the issue to younger people might be reflected in comparatively greater interest on the part of the younger age groups gains empirical support. Ninety per cent of those under forty show some degree of interest with nearly fifty per cent of those expressing great interest. The middle age group, on the other hand, which in other voting studies has shown the greatest interest in elections and campaigns, has the lowest percentage of "very interested" responses

TABLE III

PERCENTAGE[a] DISTRIBUTION OF INTEREST IN FLUORIDATION, OPINIONS ON FLUORIDATION, VOTING TURN-OUT AND DIRECTION OF VOTE ACCORDING TO SELECTED CATEGORIES OF AGE

Dependent variable	Age in Years					
	21-30	31-40	41-50	51-60	61-70	71+
Interest in fluoridation:						
Very interested	42	43	30	29	41	34
Moderately interested	47	47	50	55	34	40
Not interested	11	10	20	16	25	26
Total	100	100	100	100	100	100
(N)[b]	(74)	(100)	(60)	(51)	(32)	(38)
Opinion on fluoridation						
Definitely for	55	60	48	31	34	30
Indiff. or Undecid.	32	31	42	43	41	30
Definitely against	12	9	10	26	25	41
Total	99	100	100	100	100	101
	(74)	(100)	(59)	(51)	(32)	(37)
Voting turn-out:						
Voted	32	42	45	49	58	53
Did not vote	68	58	55	51	42	47
Total	100	100	100	100	100	100
(N)	(74)	(100)	(60)	(51)	(32)	(38)
Direction of vote:						
Voted for	61	80	83	68	47	24
Voted against	39	21	17	32	53	77
Total	100	101	100	100	100	101
(N)	(23)	(39)	(25)	(22)	(15)	(17)

[a] See Table II

[b] See Table II

although over fifty per cent of this group express moderate interest in the issue. These results would seem to lend support to the idea that the high interest shown by the younger people is a function of the specific issue, the middle age groups or "mature" population maintaining interest in fluoridation as a public issue but without the enthusiasm that would be appropriate to a more personally relevant topic. Older people, sixty and over, have significantly less interest than the younger age groups and it will be seen that in this group more than twenty-five per cent or twice as many as in other groups, are not interested at all. Older people, of course, stand to benefit least from fluoridation and may be less receptive to innovations such as public health measures.

The trend in the relationship between interest and age is somewhat more marked in the case of opinions on fluoridation and age. As can be seen from Table III the percentage of people in favour of fluoridation decreases from fifty-five per cent in the age category of 30-39 to thirty per cent in the "over seventy" group. The distribution of the direction of opinions on fluoridation according to age is significant at the .01 level. It is noteworthy, however, that the six age categories used in the analysis dichotomise into two groups of "over fifties" and "under fifties" according to direction of opinions on fluoridation. The categories in the latter group are all approximately fifty per cent and over in favour of fluoridation while the categories in the former group are all just over thirty per cent in favour. The age of fifty, then, appears to be a convenient dividing line between the high probability of a "pro" opinion and the high probability of an "anti" opinion.

As in the case of interest it would seem that the personal relevance of the issue plays a part in determining the opinion, for the older the individual, the more removed he is from the effectiveness of fluoridation whether for himself or his family. In addition, the older the individual, the more likely that he will have pre-existing frames of reference in which to fit the issue and since public health measures are a relatively recent institution it would seem likely that fluoridation would be more likely to be resisted by older people.

Older people display a greater percentage of "indifferent or undecided" responses than do younger people but since this constitutes a tendency rather than a significant difference, the hypothesis that older people are more likely to give an "indifferent or undecided" response must be rejected. While there is little need for the older person to make a firm decision on the issue in terms of its relevance to him, this lack of relevance may be compensated for by the fact that the older individual may have pre-existing frames of reference in which to fit the issue.

While there is a very definite tendency that the older the individual the more likely he is to report voting at the fluoridation plebiscite, the differences between the various age groups are not significant. Thus while the percentage of voters increases consistently from thirty-two per cent in the 21-30 age category to a maximum of fifty-eight per cent in the 61-70 group, the distribution would appear to be by chance. Interestingly enough, the "over seventy" category display a higher voting turnout than any other category with the exception of the 61-70 group suggesting that the reversal so often

marked by other studies at sixty, sixty-five or seventy appears to come later in the fluoridation plebiscite. Although not shown in the table, the reversal actually takes place in the over eighty group where only a third of those over eighty report voting at the plebiscite. The fact that this group has been included in the over seventy group for the purposes of analysis means that the 71-80 group have as high a voting turn-out as those between fifty-one and sixty. The test for significance of the difference in voting turn-out between the polar age groups, that is the groups 21-40 and 61 plus, is significant at the .01 level.

The fact that the distribution of voting turn-out by age categories is not significant was, in part, predicted in the discussion of the development of the hypotheses concerning the relation between age and voting turn-out. It was said that the younger age groups might display higher voting turn-out because of the relevancy of the issue to the dental health of their children and while, as will be seen in the following section, there is some support for this argument, other explanations such as the specificity of the Edmonton municipal elections or a generally younger voting population in Edmonton compared to the United States need to be explored.

Age of children.

The specificity of the benefits of fluoridation to the parents of children under the age of twelve was suggested in the discussion of the relationship between age and the dependent variables. Table IV shows the relationship between the age of the respondent's youngest child and interest in fluoridation, opinions on fluoridation and voting turn-out.

It will be seen from this table that there is a very distinct

TABLE IV

PERCENTAGE[a] DISTRIBUTION OF INTEREST IN FLUORIDATION, OPINIONS ON FLUORIDATION, VOTING TURN-OUT AND DIRECTION OF VOTE ACCORDING TO AGE OF RESPONDENT'S YOUNGEST CHILD

Dependent variable	Age of Youngest Child			
	No child	under 6	6-18	over 18
Interest in fluoridation:				
Very interested	26	49	37	33
Moderately interested	59	39	50	44
Not interested at all	15	12	13	24
Total	100	100	100	101
(N)[b]	(39)	(118)	(74)	(88)
Opinion on fluoridation:				
Definitely for	54	57	45	28
Indiff. or Undecided	26	33	40	43
Definitely against	20	10	15	28
Total	100	100	100	100
(N)	(39)	(118)	(73)	(88)
Voting turn-out:				
Voted	49	39	58	44
Did not vote	51	61	42	56
Total	100	100	100	100
(N)	(37)	(114)	(64)	(75)
Direction of Vote:				
Voted for	65	77	70	39
Voted against	35	23	30	61
Total	100	100	100	100
	(17)	(44)	(37)	(33)

[a] See Table II

[b] See Table II

tendency towards greater interest in fluoridation on the part of those with young children, this distribution being significant at the .05 level. While fifty per cent of those with pre-school children are very interested in fluoridation, only thirty per cent of those with young children are that interested, this latter group displaying twenty-four per cent of "not interested at all" responses, a percentage nearly double that of other groups. Despite the fact that fluoridation is effective up to the age of twelve, it will be noted that there is a marked difference between the "under six" and the "six to eighteen" groups in the distribution of the responses "very interested" and "moderately interested" -- whereas nearly sixty per cent of the interested responses of the former group are "very interested", little more than forty per cent in the older group display this much enthusiasm. This cannot be accounted for by the fact that the latter group included children for whom fluoridation would have no relevance (that is, children over twelve) since inspection of the data reveals that the parents of the older children within this category are actually more interested in the issue than are the parents of the younger children with ages from six to twelve. It is also of interest to note that the respondents with no children express the least number of "very interested" responses but that the total of "moderately interested" and "very interested" is nearly as high as those with school age children. Presumably, this tendency reflects a potential relevance of fluoridation.

The greater interest in fluoridation of respondents with young children is reflected in a slight but not significant tendency towards the younger families holding the more firm opinions. Thus fifty-six per cent of the respondents with children over eighteen

report a definite "for" or "against" fluoridation compared to sixty-seven per cent of those with children under school age. On the other hand, the contrast between the groups in terms of direction of opinion is striking, for while only twenty per cent of those with grown up children are in favour of the issue, nearly twice that number in the pre-school group claim to be in favour of fluoridation. As in the case of interest, those without children tend to report opinions more similar to those of respondents with young children than those with grown up families. The distribution of opinions for and against fluoridation is significant beyond the .01 level.

The tendencies toward greater interest and definiteness of opinion typifying respondents with young children are not reflected in voting turn-out and the group with pre-school children displays the lowest voting turn-out of all with only thirty-nine per cent reporting voting compared to fifty-eight per cent of those without any children. The distribution of the voting turn-out is not significant and in view of the tendency in the opposite direction to that predicted, the hypothesis that respondents with young families will display greater voting turn-out than those with no families or grown-up families can be rejected.

When, however, the "young family" does turn out to vote, they vote significantly more often in favour of fluoridation than do the "grown-up family" group. Thus, of the families with pre-school children seventy-seven per cent vote in favour of fluoridation compared to thirty-nine per cent of those with grown-up families.

Education

Lazarsfeld's statement that formal education is a direct creator of interest appears to be well validated in the present study.[1] As is shown by Table V, only fifty-six per cent of those with one to six years of education have any interest at all in the issue, compared to approximately ninety per cent of those with high school education and better, and while seventy-eight per cent of those with seven to nine years of education express interest, little more than a quarter of these are very interested. In fact, this differentiation between "interested" and "very interested" is most marked in the "thirteen plus" category, mostly university graduates, suggesting that the higher the education, the more likely that the interest will be enthusiastic rather than moderate. The distribution of interest according to education is significant at greater than the .01 level.

The hypothesis that the higher the education the more likely that the opinion will be in favour of fluoridation and the less likely that the opinion will be undecided or indifferent receives strong empirical support. Only thirteen per cent of those with one to six years' education are in favour of fluoridation with nearly double that percentage against, while in the thirteen years and more education category, sixty-eight per cent of the respondents are definitely in favour compared to only twelve per cent against. Thus with increasing education it can be said that the probability of a pro-fluoridation opinion increases and, in fact, the distribution of those "definitely for" and those "definitely against" by education is significant at the .01 level.

This evidence does not, of course, validate the argument used

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[1]Lazarsfeld, Berelson, and Gaudet, op.cit., 42.

TABLE V

PERCENTAGE[a] DISTRIBUTION OF INTEREST IN FLUORIDATION, OPINIONS ON FLUORIDATION, VOTING TURN-OUT AND DIRECTION OF VOTE ACCORDING TO SELECTED CATEGORIES OF EDUCATION

Dependent variable	Education in Years			
	1-6	7-9	10-12	13 plus
Interest in fluoridation:				
Very interested	28	21	45	49
Moderately interested	28	57	47	40
Not interest at all	44	21	8	11
Total	100	99	100	100
(N)[b]	(32)	(98)	(142)	(82)
Opinion on fluoridation:				
Definitely for	13	32	54	68
Indiff. or Undecided	64	47	30	20
Definitely against	23	21	16	12
Total	100	100	100	100
(N)	(31)	(97)	(142)	(82)
Voting turn-out:				
Voted	21	33	47	59
Did not vote	79	67	53	40
Total	100	100	100	99
(N)	(24)	(87)	(131)	(79)
Direction of vote:				
Voted for	20	50	64	79
Voted against	80	50	36	21
Total	100	100	100	100
(N)	(5)	(28)	(61)	(47)

[a] See Table II

[b] See Table II

in making the prediction but it does say that the better educated are listening to the rational appeals of the pro-fluoridation propaganda rather than the emotional appeals of the anti-fluoridationists and it is tempting to suggest that the better educated identify themselves with the authorities that produce scientific evidence in favour of fluoridation. These authorities are part of their own educational experience. On the other hand, such a statement requires qualification since the "antis" also produce scientific evidence to support their claims and the evidence is usually validated by prestigious authority. For example, the campaign in Edmonton was highlighted by a pamphlet declaring that fluoridation was by no means safe and efficacious in the prevention of caries and that furthermore, grave risks to health and water pipes were involved in its use -- all these statements and more were made under the name of Dr. Robert Newton, a former President of the University of Alberta and a distinguished chemist.[2] If a psychological process of identification is postulated in the acceptance of some evidence and not of other, cases similar to that quoted are difficult to explain.

Table V also shows very clearly that as formal education increases, the percentage of "indifferent or undecided" responses decreases so that while the least educated group has a total of sixty-four per cent in this neutral category, the thirteen years and over group has only twenty per cent who have not made up their minds in one direction or the other. Again, while this does not necessarily

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[2]Pamphlet issued under the auspices of the Edmonton Pure Water Association and delivered door-to-door in the 1959 campaign.

validate the basis of the prediction -- that is, that the better educated have more access to information -- assuming that a decision is based on some kind of information, it at least lends support to the idea. It might also be said that the better educated are more accustomed to decision-making and may, in fact, need less information on which to base a decision. Further, the better educated may possess an already existing frame of reference arising out of past experience with doctors, dentists and other public health measures into which fluoridation is fitted. There is, in other words, less difficulty in evaluating the issue and less concern with the controversies.

In addition to the significant relationships between interest and definiteness and direction of opinion and education, voting turn-out is also significantly related to education. Table V shows clearly that as education increases, the voting turn-out increases from a turn-out of twenty-one per cent for those with education between one and six years to sixty per cent for those with thirteen or more years of education. It is noteworthy that those who had more than seventeen years' education (included in the table in the thirteen plus category), that is, those that had received some post-graduate education, display a voting turn-out of seventy-five per cent.

Occupation and income. These two indices of socio-economic status are very much related and the relationship is reflected in the fact that the distribution of the dependent variables in terms of occupation and income display similar patterns of significance.

The relationship between income and interest in fluoridation is displayed in Table VI and it will be seen that the higher the income,

TABLE VI

PERCENTAGE[a] DISTRIBUTION OF INTEREST IN FLUORIDATION, OPINIONS ON FLUORIDATION, VOTING TURN-OUT AND DIRECTION OF VOTE ACCORDING TO INCOME

Dependent variable	Income in $'s					
	under 1,000	1000-2999	3000-4999	5000-6999	7000-8999	9+
Interest in fluoridation:						
Very interested	24	31	40	48	46	33
Moderately interested	43	44	50	40	54	58
Not interested at all	33	26	10	12	0	8
Total	100	101	100	100	100	99
(N)[b]	(21)	(62)	(111)	(92)	(24)	(24)
Opinion on fluoridation:						
Definitely for	24	23	48	65	67	58
Indiff. or undecided	52	49	31	30	25	29
Definitely against	24	28	21	4	8	13
Total	100	100	100	99	100	100
(N)	(21)	(61)	(111)	(92)	(24)	(24)
Voting turn-out:						
Voted	19	39	43	49	59	43
Did not vote	81	61	57	51	41	56
Total	100	100	100	100	100	99
(N)	(66)	(54)	(105)	(85)	(22)	(23)
Direction of vote:						
Voted for	0	43	70	77	77	70
Voted against	100	57	30	22	23	30
Total	100	100	100	99	100	100
(N)	(3)	(21)	(46)	(40)	(13)	(10)

[a]See Table II

[b]See Table II

the greater the interest in fluoridation, a distribution that is significant at the .01 level. The percentage of those who are not interested at all decreases steadily from thirty-three per cent in the low income group to four per cent in the high income groups. The relationships between the "very interested" and the "moderately interested" categories vary from group to group, the "very interested" responses constituting more than fifty per cent of the "interested" responses in income group $5000-6999 which might be considered a "just better than average" income group. In the next higher income group the percentage of "very interested" responses drops to forty-six per cent, while in the high income group, only a third of those who claim to be interested in the issue, say that they are "very interested". This latter group, however, displays a high proportion of "moderately interested" responses, with a total of ninety-one per cent being either moderately or very interested in the issue.

In the case of occupation and interest, although the distribution of interest in fluoridation is significant at the .01 level, the relationship cannot be simply described as "the higher the occupational level, the greater the interest". The self-employed have almost as high a percentage of "not interested at all" as have the unskilled, while the clerical and sales groups have the lowest rate of any occupation group of "very interested" responses. If, however, the total of "very interested" and "moderately interested" responses is taken as the index of "interest", then it can be said that the higher the occupational level, the more likely that the individual is to be interested in the issue, although the self-employed must be excepted from this generalisation. As a group, the self-employed's interest

pattern appears to be closer to the "working classes" than to other occupational groupings and this can be no doubt accounted for by the fact that the self-employed category probably includes a number of skilled and semi-skilled tradesmen in business for themselves.

As income increases, the percentage of pro-fluoridation opinions increases and the percentage of "indifferent and undecided" responses decreases, with a slight but not significant tendency to reversal in the "over $9000" category. It is noteworthy that the percentage of anti-fluoridation opinions is lowest in the "$3000-4999" and "$5000-6999" categories with four and eight per cent respectively claiming "anti" opinions. The "over $9000" group, on the other hand, has thirteen per cent opposed to the issue. It might be suggested that this tendency to less interest, more indifferent and undecided opinions and more "anti" opinions in the highest income groups is a reflection of this group's increasing independence of community resources -- it can well afford to pay its own dental bills. On the other hand, the individuals that can least afford to ignore the issue, those with an income of less than $3000, are as likely to be indifferent or undecided about fluoridation as they are to have a definite opinion, and even when they do have an opinion, it is as likely to be opposed as to be in favour.

Occupation also effectively differentiates opinions on fluoridation although, as in the case of interest, the self-employed constitute a group that is more like the unskilled than the professional and managerial levels in the distribution of their opinions on fluoridation. As is shown in Table VII, however, the higher occupational levels are more in favour of fluoridation than are the lower levels -- in fact, it might be said that the professional and white collar workers are distinctly in

TABLE VII

PERCENTAGE[a] DISTRIBUTION OF INTEREST IN FLUORIDATION, OPINIONS ON FLUORIDATION, VOTING TURN-OUT AND DIRECTION OF VOTE ACCORDING TO OCCUPATIONS[c]

Dependent variable	Occupations					
	Professional	Managerial	Self-employed	Clerical-sales	Skilled and Semi-skilled	Unskilled
Interest in fluoridation:						
Very interested	52	30	41	28	42	30
Moderately interested	38	70	37	67	43	40
Not interested at all	10	0	22	5	15	30
Total	100	100	100	100	100	100
(N)[b]	(21)	(23)	(27)	(43)	(146)	(27)
Opinion on fluoridation:						
Definitely for	62	61	42	63	49	41
Indiff. or undecided	33	26	46	28	34	44
Definitely against	5	13	12	9	17	15
Total	100	100	100	100	100	100
(N)	(21)	(23)	(26)	(43)	(146)	(27)
Voting turn-out:						
Voted	63	39	48	45	60	76
Did not vote	37	61	52	55	40	24
Total	100	100	100	100	100	100
(N)	(19)	(23)	(23)	(42)	(134)	(25)
Direction of vote:						
Voted for	86	64	64	75	69	67
Voted against	14	36	36	25	31	33
Total	100	100	100	100	100	100
(N)	(7)	(14)	(11)	(20)	(52)	(6)

[a] See Table II

[b] See Table II

[c] Classified according to the respondent's occupation if male, single female, widow or divorcee, otherwise by husband's occupation. Retired and unemployed are omitted from the table.

favour of fluoridation with relatively few "indifferent or undecided" and but a sprinkling of "anti's". Of the blue collar workers, on the other hand, less than fifty per cent are in favour of fluoridation, forty per cent are indifferent and fifteen per cent are opposed. The distribution of the "for" and "against" responses according to occupation is significant at the .01 level, but the distribution of the definitely "for" or "against" the issue compared to those who are undecided is not significant.

Although there are marked tendencies for the higher the occupational status and the higher the income, the greater the voting turn-out, neither of these relationships is significant. Interestingly enough, in both the case of occupation and of income, the highest categories of all display a reversal of the tendency. Thus, the professional category has a voting turn-out that is similar to the skilled and semi-skilled, while those with an income over $9000 have a turn-out that approximates that of the $3000-4999 group. It is noteworthy, too, that it is the "just better than average" income category -- that is, between $5000 and $6999 -- that has the highest voting turn-out, while in the case of occupation, the clerical and managerial or "white-collar" groups have the highest turn-out. The typology of the "solid citizen", the middle class, community minded, upwardly mobile, "white collar" worker suggests the epitome of the voter.

Property ownership.

Property ownership, which it was suggested might serve as a crude index of residential mobility, does not appear to be a critical characteristic distinguishing the population in terms of degree of interest in fluoridation. Table VIII shows that the amount of interest

TABLE VIII

PERCENTAGE[a] DISTRIBUTION OF INTEREST IN FLUORIDATION, OPINIONS ON FLUORIDATION, VOTING TURN-OUT AND DIRECTION OF VOTE ACCORDING TO PROPERTY OWNERSHIP

Dependent variable	Ownership Status	
	Owns property	Does not own property
Interest in fluoridation:		
Very interested	39	36
Moderately interested	45	49
Not interested at all	16	15
Total	100	100
(N)[b]	(236)	(130)
Opinion on fluoridation:		
Definitely for	43	55
Indiff. or Undecided	37	33
Definitely against	20	12
Total	100	100
(N)	(235)	(119)
Voting turn-out:		
Voted	56	19
Did not vote	44	81
Total	100	100
(N)	(215)	(108)
Direction of vote:		
Voted for	62	81
Voted against	38	19
Total	100	100
(N)	(120)	(21)

[a] See Table II

[b] See Table II

recorded by each category is approximately equal, the slight difference in the distribution of the "very interested" and "moderately interested" categories being not significant. It appears, then, that neither the vested interest in city affairs presupposed by payment of taxes nor the residential stability implied by property ownership has any influence on the amount of interest in a municipal issue such as fluoridation.

Similarly, differences between property owners and non-property owners in terms of direction of opinion on fluoridation and the definiteness of the opinion are not significant. It is apparent from Table VIII, however, that the differences that do exist tend to be in the opposite direction to that predicted by the hypothesis. Thus, more people not owning property claim to be in favour of fluoridation than do people who do own property and the former group has a smaller percentage of "indifferent or undecideds" than the taxpayers.

Despite the fact that there is little difference between property owners and non-property owners in terms of interest in fluoridation and opinion on fluoridation, the difference in voting turn-out is very striking. While property owners constitute two thirds of the sample, eighty-five per cent of those reporting voting are property owners, fewer than twenty per cent of the non-property owners claiming to exercise their vote. This difference in voting turn-out is significant at greater than the .01 level and it would appear that, despite equal interest, the voting population at the fluoridation plebiscite is heavily biased in favour of taxpayers.

Several explanations can be offered to account for this difference. It may be said that the property owner has a greater vested interest in city affairs and that it is ultimately more important to the taxpayer

whether fluoridation is passed or not. It is the taxpayer who will be likely to be using the water for some years to come and it is the taxpayer's money that will be used to pay for the addition of fluorides to the water. Alternatively, the relationship can be accounted for by a concept such as community identification in which stability of residence and occupation might play a vital role. This would appear to tie in with the suggestion made in connection with the occupation and income relation to voting turn-out in which it was pointed out that the voter at civic elections might be represented by a typology - distinctly "middle-class", property-owning and interested in general in community affairs.

The significance of the low voting turn-out of the non-taxpayers to the plebiscite as a whole can be seen from the percentage distribution of the direction of the vote. While those who do not own property are not significantly more likely to vote in favour of fluoridation than those who do own property the tendency is quite marked and approaches significance at the .05 level. Considering the distribution of the population of opinions of non-property owners, it seems likely that greater increase in the voting turn-out of this particular group might have some impact on the outcome of the plebiscite. The fact that twenty per cent of non-voters in this group gave ineligibility because of their non tax paying status as their reason for abstention has particular relevance for the "action" point of view, since the manner in which the plebiscite is presented may be contributory to high voting delinquency on the part of the non-taxpayers.

Although it is tempting to treat "property ownership" as an explanatory variable in its own right, it might be suggested that the introduction of other variables might produce more refined explanations.

For example, it seems likely that property owners, generally speaking, would be an older group than the non-property owners and hence the difference between the groups in the case of voting turn-out might be accounted for by age. Whether with age held constant, property ownership distinguishes the voters and non-voters is a question for further analysis.

ANALYSIS OF THE DEPENDENT VARIABLES.

Interest in Fluoridation

In the case of interest in fluoridation it has been seen that the higher the occupational level, the higher the income, and the more education, the greater the interest. Women appear to be just as interested in the issue as men while there is trend that the younger the individual the more likely that he is to display interest in fluoridation. This trend is reflected in a significant difference between those with young children and those with grown-up families in the distribution of interest. Finally, the hypothesis that property owners will be more likely to be interested has been rejected, both property owners and renters displaying equal degrees of interest.

Distribution of interest in fluoridation and other issues. The general finding in other studies that approximately one third of the population is very interested in an election appears to hold true for the local fluoridation plebiscite. Thirty-seven per cent of the sample expressed themselves as being very interested in the issue with only sixteen per cent having no interest at all. It should, perhaps, be remembered that these interest ratings occurred some months after the campaign and represent the respondent's interest at the time of the interview: it may well be that interest may run considerably higher at the height of the campaign.

The comparison between the distribution of interest in fluoridation and interest in other public issues is shown in Table IX. The hypothesis that fluoridation, because of the emotional nature of the controversy, would receive fewer "not interested at all" responses than other issues is not supported by the data. In fact, the distribution of the categories of interest in the various public issues is not significant. Several tendencies that can be discerned in the table are, however, worthy of comment.

TABLE IX

PERCENTAGE DISTRIBUTION OF INTEREST IN VARIOUS PUBLIC ISSUES [a]

Degree of Interest	Public Issue			
	Fluoridation	Politics	Money By-laws	Aldermanic race
Very interested	37	24	37	33
Moderately interested	47	63	42	55
Not interested at all	16	13	22	12
Total (N) [b]	100 (356)	100 (356)	101 (356)	100 (356)

a. see Table II

b. see Table II

It will be noticed that twenty two per cent of the respondents are "not interested at all" in the money by-laws, a percentage that is nearly double those of "politics" and the "aldermanic race". This difference is undoubtedly due to the restrictive nature of the electoral regulations, non-taxpayers being unlikely to have any interest in the by-laws if they are not permitted to vote on them.

Although the total number of "interested" responses in politics

is approximately the same as in the other issues, a smaller proportion of these are in the "very interested" category. Thus, only twenty-four per cent of the population are very interested in politics compared to thirty-seven per cent in fluoridation and money by-laws. It would seem that local issues, the impact of which may be perceived as more immediate and measurable, command greater "attention" than politics in general. After all the construction of bridges, the institution of fluoridation and the honesty of the municipal officials may be considerably more salient to the individual than the federal government's policy in the Far East.

A further index of the relative interest potential of the fluoridation issue can be seen from Table X where the full interest scales of 1-7 were used to compare each respondent's interest in fluoridation with each other issue. It will be seen, first of all, that nearly forty per cent of the sample were equally interested in fluoridation as in politics, by-laws and the aldermanic elections. In the case of the local issues, approximately equal numbers were more and less interested in fluoridation, whereas in the case of politics thirty-eight per cent were more interested in fluoridation compared to twenty-three per cent who were less interested. The correlation between interest in fluoridation and interest in the other issues would appear to be quite high (although it has not been calculated statistically) and it should be noted that only five per cent of the differences in interest in the respective issues were polar: that is, only five per cent of the sample reported that they were very interested in one issue, say fluoridation, and not interested at all in the by-laws.

TABLE X

COMPARISON OF THE RESPONDENTS' INTEREST IN FLUORIDATION AND THEIR INTEREST IN OTHER PUBLIC ISSUES

Comparative interest in fluoridation	Other public issues		
	Politics	By-laws	Aldermanic elections
%[a] more interest in fluoridation	38	31	31
% with same interest in fluoridation	39	39	38
% with less interest in fluoridation	23	30	31
Total (N)[b]	100 (356)	100 (356)	100 (356)

[a]See Table II

[b]See Table II

Opinions on fluoridation

The population of opinions from which the plebiscite is drawn represents a somewhat discouraging picture to those concerned with ensuring a favourable public climate for the presentation of the issue in plebiscite form. Forty-seven per cent of the sample profess to be definitely in favour of the issue, seventeen per cent definitely against and thirty-six per cent indifferent or undecided. It is obvious that the role of the "indifferent and undecided" is critical to the outcome of a plebiscite, particularly where the majority required is in excess of fifty per cent.

This distribution of opinions appears to compare with the national poll in the United States reported by Galagan, where fifty-three per cent reported in favour of fluoridation, eighteen per cent against and twenty-nine per cent did not know. On the other hand, Edmonton would

appear to be at a disadvantage with other cities such as Detroit and Cincinnati where eighty per cent of the population expressed the opinion that they were in favour of fluoridation.[3] These latter polls were conducted just prior to the plebiscite and it may be that a somewhat different distribution of Edmonton opinions would be found closer to the presentation of the issue, when the "indifferent and undecided's" might crystallise their opinion.

The distribution of the opinions in Edmonton does not appear to be by chance throughout the population and, as has been indicated in the previous section, certain social characteristics appear to distinguish those who are "for" and those who are "against" the issue of fluoridation. Thus the higher the education, the higher the occupational level and the higher the income, the more likely that the individual is to be in favour of fluoridation. Significant differences are also found between age groups with the oldest people being more likely to be against fluoridation, while those with young families are more likely to be pro-fluoridation than are those with grown-up families. Associated with age is the fact that those who rent their homes are significantly more likely to be "pro" than are those who own their own homes. There is no significant difference between men and women in terms of the direction of their opinions on fluoridation.

While the foregoing characteristics distinguish those who are "pro" and those who are "anti" fluoridation, education is the only characteristic that distinguishes those that have a definite opinion (regardless of direction) and those that are undecided. The higher the

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[3]See Chapter II, 25.

education, the more likely that an individual is to have a definite opinion on the subject of fluoridation.

Opinion on fluoridation and interest.

The hypothesis that the more interested an individual is on the issue of the fluoridation, the more likely that he will have a definite opinion on the subject, is well demonstrated in Table XI. Thus, while ninety-two per cent of those who claim to be very interested in the issue have made up their minds whether they are in favour or against fluoridation, only forty per cent of those who are not interested at all claim to be definitely "for" or "against" the issue. Actually, those who are moderately interested show a distribution of opinions similar to this latter group with fifty per cent indifferent or undecided on the issue. The distribution of those with definite opinions and those indifferent or undecided in terms of interest is significant at greater than the .01 level.

TABLE XI

THE PERCENTAGE[a] DISTRIBUTION OF OPINIONS ON FLUORIDATION ACCORDING TO DEGREES OF INTEREST IN THE ISSUE

Opinion on fluoridation	Very interested	Moderately interested	Not interested at all
Definitely for	73	41	4
Indifferent or Undecided	8	50	60
Definitely against	19	10	36
Total	100	101	100
(N)[b]	(134)	(165)	(55)

[a] See Table II

[b] See Table II

Interest is also a very cogent factor in the direction of the opinion, for while those that are very interested and moderately interested in the issue appear to be four times more likely to be in favour than opposed to the issue, the "not interested" group are nine times more likely to be against fluoridation than for it. Thus, although the "not interested" group constitutes only sixteen per cent of the sample, a third of those who are opposed to the issue are drawn from this group. It seems that when individuals who are not interested in the issue, and hence have given the matter no consideration, are faced with the necessity of making a decision on the subject, they are more likely to record an "anti" opinion which requires little or no justification. It is traditionally easier to prove something wrong than to prove it right and reports of pro-fluoridationists on the conduct of their campaigns demonstrate that those in favour of the issue comprise the side that takes the defensive position.

As an alternative explanation, it might be said that an individual with an "anti" opinion could have no interest in the issue for the simple reason that he is opposed to it. In this case, the question "how interested are you in fluoridation?" is perhaps interpreted by the respondent as meaning how interested he is in seeing the water fluoridated rather than meaning how much attention he pays to it.

Voting Turn-out

Only two social characteristics significantly distinguish voters and non-voters. The higher the education the more likely the individual is to vote while property-owners exercise their voting privilege more often than do non-property owners. There are strong tendencies that the older the individual the more likely that he is

to vote and the higher the occupational and income levels, the higher the voting turn-out but such trends are not significant at the .05 level. There appears to be very little difference between men and women in the exercise of their voting privilege.

Some qualifications.

The problem of the reliability and validity of the answers to an interviewer's questions is an ever present hazard in survey analysis and in very few cases is there an objective check on the answers that are given. Sometimes, as in the case of voting behaviour, it may be possible to turn to official records to check whether, in fact, the individual's response was valid -- alternatively, the known percentage votes of the election in question compared to the percentage reported vote of a randomly drawn sample provides an index of the validity of the responses. The comparison of the sample and actual percentage votes at the fluoridation plebiscite and the previous provincial and federal elections are shown in Table XII where it is seen that, in all three cases, there appears to be a significantly higher percentage of voters in the sample than in the actual elections. For this reason, the findings relative to the distribution of voting turn-out in terms of social characteristics are tentative and subject to qualification.

It would appear, then, that respondents tend to report voting at one or all of the elections when, in fact, they have not done so. Two explanations offer themselves immediately. First, the question as to their voting behaviour required recall over as long a period as a year or more. It would not be surprising if intentions to vote were recalled as actual votes or if actual "don't know" or "can't remember" responses were translated into the more socially acceptable answer of "yes, I did

vote." In this connection, there were only seven "don't know" responses to the question as to whether the individual had voted at the fluoridation plebiscite and only six "don't know" responses to similar questions with respect to the federal and provincial elections. Secondly, the interview situation itself might be conducive to positive answers rather than to acknowledgement of voting abstention. In the face of questioning by an obviously middle-class, university educated interviewer, guilt feelings relative to voting abstention might well arise -- and hence the inaccurate but socially acceptable response that they did vote.

TABLE XII

COMPARISON OF THE ACTUAL PERCENTAGE[a] VOTES AND THE PERCENTAGE VOTES REPORTED BY THE SAMPLE AT THE FLUORIDATION PLEBISCITE AND THE PROVINCIAL AND FEDERAL ELECTIONS

Election	Reported Percentage Vote	Actual Percentage Vote	Significance[b] of Difference
Federal	76	69	.01
Provincial	75	59	.01
Fluoridation	46	35	.01

[a]See Table II

[b]Using the normal approximation to the binomial distribution.

More dissembling may be taking place in the higher socio-economic classes where the pressure to vote is greater than in the lower socio-economic classes.

Two contributing factors, other than recall and dissembling, to this bias in favour of voters should be borne in mind. First, the mortalities are more likely to represent voting abstentions than actual votes. Thus, the individuals who refused to be interviewed on the grounds of not being interested or of being too old or too sick may be inferred as unlikely to have voted. Interviewees that were never home owing to the nature of their employment might also be inferred as unlikely to have voted.

Secondly, a majority of the respondents who were not eligible to vote were drawn from lower socio-economic areas, as were those mortalities that were dropped from the sample because of language difficulties. According to the ecological data, these areas have the lowest rates of voting behaviour and, therefore, had these been replaced by eligible voters the probability of getting a preponderance of non-voters would have been relatively high.

Opinion on fluoridation and voting turn-out.

A frequently heard explanation for the failure of the plebiscites was that individuals who were in favour of fluoridation failed to get out and vote while those who were opposed turned out to the man. This explanation is not, however, supported by empirical evidence although as seen in Table XIII a tendency towards a greater turn-out on the part of the "antis" is evident. This tendency is not significant.

TABLE XIII

THE PERCENTAGE[a] DISTRIBUTION OF OPINIONS ON FLUORIDATION ACCORDING TO WHETHER THE RESPONDENT VOTED AT THE PLEBISCITE

Voting behaviour	Opinion on fluoridation		
	Definitely for	Indifferent or Undecided	Definitely against
Voted	52	24	61
Did not vote	48	76	39
Total (N)[b]	100 (160)	100 (106)	100 (56)

[a]See Table II

[b]See Table II

The hypothesis that the more decided the opinion, the greater the turn-out is, however, supported by the data. Fifty-four per cent of those definitely "for" and "against" report casting their vote as compared to only twenty-three per cent who went to the polls indifferent or undecided in their opinion. This difference is significant at greater than the .01 level. While it is customary to deplore the poor turn-out at civic elections, it is probably of some consolation that the majority of the voters had given the issue sufficient thought to have framed a definite opinion.

Interest in fluoridation and voting turn-out. As predicted, those with greater interest are more likely to turn out to vote than are those with little or no interest. As can be seen from Table XIV nearly sixty per cent of those who are very interested turn out to vote as compared to only twenty-three per cent of those with no interest at all. The distribution of voting turn-out according to interest is significant at greater than the .01 level. Looking at this relationship in another way, it can be seen that more than fifty per cent of those who vote

are very interested in the issue while only eight per cent of the voters report that they have no interest at all. This finding is comparable to that in the previous paragraph where it was reported that over fifty per cent of those voting have definite opinions on the issue.

TABLE XIV

PERCENTAGE DISTRIBUTION OF VOTING TURN-OUT ACCORDING TO INTEREST IN FLUORIDATION

	Interest in fluoridation		
	Very Interested	Moderately Interested	Not interested at all
Voted	59	38	23
Did not vote	41	62	77
Total	100	100	100
(N)	(127)	(149)	(47)

It is, of course, not without significance that as many as forty per cent of those who claim to be very interested fail to record their vote. This seems to suggest that while the issue may have salience and relevance to a large part of the population, the voting behaviour itself is relatively independent of the issue. That is, although the relationship between interest and turn-out is clearly established, the relationship is not necessarily causal. Thus an individual can be very interested in fluoridation without feeling any impellent to vote. This interpretation is strengthened by the fact that, as has already been discussed, fluoridation has as high an interest potential as politics and relatively more "very interested" responses, but the voting turn-outs at political elections are markedly higher. It would appear that the low turn-out at municipal elections necessitates other explanations than that of interest in the issues at stake.

Fluoridation turn-out and voting at the federal and provincial elections. The low turn-out at the fluoridation plebiscite raises the question as to whether the voting population at the plebiscite constitutes an independent population or whether, in fact, it is a sub-population of the population of voters at federal and provincial elections. It was hypothesised that those who reported voting at the city elections would be more likely to report voting at the previous provincial and federal elections than those who did not report voting at the city elections. This hypothesis is substantiated by the data and as can be seen from Table XV ninety-six per cent of those who voted at the city elections report voting at either or both of the federal and provincial elections. Seventy-five per cent of those who did not vote at the city elections voted at the federal and provincial elections but whereas eighty-one per cent of the city voters report voting at both federal and provincial elections, only forty-eight per cent of the city non-voters, claim to have recorded both votes. The difference in political voting activity of voters and non-voters at the city elections is significant beyond the .01 level.

Direction of Vote

The distribution of the direction of the vote in the fluoridation plebiscite according to the various social characteristics, closely follows the distribution of opinions on fluoridation. There is no difference between men and women in the direction in which they vote at the fluoridation plebiscite but the older the individual the more likely he is to report voting against the issue. People with young children are more likely to vote in favour of the issue than are

those with grown-up families while the higher the income, educational and occupational levels, the more likely the vote is in favour of fluoridation. There is a tendency that non-property owners are more likely to vote in favour of the issue than are property owners, although this tendency is not significant.

TABLE XV

VOTING ACTIVITY OF VOTERS AND NON-VOTERS IN THE CITY ELECTIONS AT THE FEDERAL AND PROVINCIAL ELECTIONS

Voting activity	City election voting status	
	Voted	Did not vote
%[a] Voted at <u>both</u> provincial and federal elections	81	48
% Voted at <u>either</u> provincial or federal elections	15	27
% Voted at neither	4	25
Total	100	100
(N)[b]	(172)	(159)

[a]See Table II

[b]See Table III

As in the case of voting turn-out, the above conclusions relative to the social characteristics of those that vote "for" and

those that vote "against" the issue must be qualified in view of the fact that the percentage of respondents claiming to vote in favour of fluoridation is significantly greater, at the .01 level, than the actual percentage of votes in favour. While the sample records a percentage vote in favour of fluoridation of approximately sixty-four per cent, the actual "pro" vote was just over fifty-five per cent.

It is unlikely that difference can be accounted for in terms of recall alone since ostensibly there is no more reason why a respondent should make an error in one direction more than the other. Where, however, an individual had reported voting when in fact he had not, it is not unlikely that he would report voting in favour of the issue rather than against. In the interview situation, a report of a vote in favour may constitute a socially acceptable response. In addition, as was argued in the case of voting turn-out, the probability of "anti" votes among the refusals and other mortalities, if these individuals had turned out to vote, would be relatively high since so many of these fell in the high "anti" polling divisions.

Direction of vote and opinion on fluoridation.

The obvious fact that those who are definitely in favour of or opposed to fluoridation vote "for" and "against" respectively when they go to the poll is shown in Table XVI. The two individuals who had voted against at the plebiscite but who reported being definitely in favour of the issue claimed to have changed their minds in the interim period. It is interesting to observe the disposition of the votes of the "indifferent and undecided" and for the purposes of this analysis the opinions of those who went to the municipal polls but did not vote are included in the table. It will be seen that the "indifferent or undecided"

are significantly more likely to vote against fluoridation or to refrain from voting than they are to vote in favour of the issue. Thus, forty-three per cent of this group did not cast their vote although they were actually at the polls, while twenty-four and thirty-three per cent voted "for" and "against" respectively. There are no significant differences between the "against" and "refrain from voting" responses nor between the disposition of the "for" and "against" votes.

TABLE XVI

PERCENTAGE[a] DISTRIBUTION OF THE DIRECTION OF THE RESPONDENT'S VOTE ACCORDING TO HIS OPINION ON FLUORIDATION

Direction of vote	Opinion on fluoridation		
	Definitely "for"	Indifferent or Undecided	Definitely "against"
Voted "for"	92	24	0
Voted "against"	2	33	92
Went to polls but did not vote on fluoridation	6	43	8
Total	100	100	100
(N)[b]	(88)	(42)	(37)

[a]See Table II

[b]See Table II

It was remarked earlier in this chapter that the disposition of the "indifferent or undecided" responses was significant to the outcome of the plebiscite since they held what might be termed the "balance of power" particularly for a sixty-six and two thirds majority. In actual fact, the impact of this group on the plebiscite is relatively small to the extent that, if they vote at all, they are approximately equally likely to vote "for" and "against". It is, perhaps, somewhat

surprising that such a percentage of this group refrain from voting even though attending the polls. If this percentage is reliable, it tends to show that attendance at the poll is associated with some degree of responsibility, rather than just voting for the sake of voting: it represents an interesting comment on the oft heard cry that "it does not matter which way you vote, as long as you get out to vote!"[4]

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[4] A fuller discussion of the respondents who went to the municipal polls but failed to vote, is included in Appendix B.

CHAPTER VI

THE ROLE OF RELIGIOUS AND POLITICAL INSTITUTIONS IN THE FLUORIDATION PLEBISCITE

This chapter reports the testing of the hypotheses developed in Chapter III relating to political and religious influences on the formation of opinions on fluoridation and on the outcome of the plebiscite.

Political Influence and the Fluoridation Plebiscite

Although no hypotheses were developed for political preference on the dependent variables of interest and voting turn-out, these relationships, in addition to those of political preference and opinion on fluoridation and political preference and direction of vote, are shown in Table XVII.

Turning first to "interest" it will be seen that there is relatively little difference between the various "political preferences", although Social Crediters display least "very interested" responses; with fifty-two per cent of "moderately interested" responses, however, their total interest is approximately the same as Conservatives and Liberals. The distribution of interest according to political preference is not significant.

Two other relationships shown in Table XVII are worthy of note. First, the category of political preference referred to as "the rational voter" in the table displays the least number of "not interested at all" responses with ninety-four per cent of this group expressing some degree of interest in the issue. This group expressed no specific party preference, using phrases such as "I always vote for the man" or "it depends on the

TABLE XVII

THE PERCENTAGE[a] DISTRIBUTION OF INTEREST IN FLUORIDATION, OPINIONS ON FLUORIDATION, VOTING TURN-OUT AND DIRECTION OF VOTE ACCORDING TO POLITICAL PREFERENCE

Dependent Variables	Political preference				All "Preferences"	The rational voter	No preference
	Cons.	Lib.	Soc.Cred.	C.C.F.			
Interest in fluoridation:							
Very interested	40	43	37	30	39	47	32
Moderate interest	43	44	52	50	46	47	47
No interest	17	13	11	20	14	6	21
Total	100	100	100	100	99	100	100
(N)	(84)	(54)	(56)	(20)	(214)	(34)	(108)
Opinion on fluoridation:							
Definitely for	54	53	52	40	52	65	32
Indiff.or Undecid.	31	30	34	40	32	18	47
Definitely against	15	17	14	20	16	18	20
Total	100	100	100	100	100	101	99
(N)[b]	(83)	(53)	(56)	(20)	(212)	(34)	(108)
Voting turn-out:							
Voted	57	46	35	35	47	70	30
Did not vote	43	54	65	65	53	30	70
Total	100	100	100	100	100	100	100
(N)	(75)	(50)	(49)	(17)	(191)	(33)	(99)
Direction of vote:							
Voted for	70	74	76	50	71	70	41
Voted against	30	26	23	50	29	30	59
Total	100	100	99	100	100	100	100
(N)	(43)	(23)	(17)	(6)	(89)	(29)	(23)

[a]See Table II

[b]See Table II

issue". Also included in this category are those who carefully explained that they had different voting preferences for the Federal and Provincial elections. This type of respondent was called the "rational voter" in that he had developed his own standards by which he judged the issues instead of following the usual practice of adhering to a particular party line. This considered approach to public affairs is reflected in the fact that this particular political type is more likely to show interest in a non-political issue than is the individual who has a specific political preference.

Secondly, those with no political preference, a group which constitutes a little less than a third of the sample, exhibit a tendency to be less interested than those with political preference. This finding supports the hypothesis that those who are interested in fluoridation are also interested in politics, assuming, that is, that the selection of a preference can be considered an index of interest.

The hypothesis that Social Crediters are more likely to be opposed to fluoridation than are Conservatives, Liberals and other parties is not supported by the data. It will be seen that of each major party, just over fifty per cent of its adherents are in favour of fluoridation and approximately fifteen per cent are opposed. If a Social Credit Party line opposed to fluoridation did exist, it does not appear to have been adopted by the large majority of those who prefer the party at political elections; this does not, of course, preclude the fact that the fourteen per cent of the Social Crediters who expressed anti-opinions could have been influenced by their party. The distribution of the direction of opinions according to "political preference" is not significant.

As in the case of interest, the two groups of "the rational voter"

and "no preference" show tendencies that provide a sidelight on public affairs on general, even though not illuminating political influence on the fluoridation issue. Thus, the "rational voters" are significantly more in favour of fluoridation and significantly more definite in their opinions, only eighteen per cent being "indifferent or undecided". It would appear that the considered approach to politics of these individuals is also characteristic of their evaluation of the fluoridation issue.

In contrast to this latter group, the "no preferences" have significantly more "indifferent or undecided" responses than those expressing a political preference. Forty-seven per cent of the "no preferences" are indifferent or undecided about the issue in contrast to thirty-two per cent of those who have a political preference. In addition when those with no political preference have a definite opinion, forty per cent were opposed to fluoridation compared to thirty per cent of those with a political preference holding definite opinions. The difference between these groups is significant at the .05 level.

As far as voting turn-out is concerned, there is a significant difference in the distribution of voting turn-out according to party preference. This can largely be accounted for by the fact that the Conservative "preferences" display a fifty-seven per cent turn-out compared to only thirty-five per cent on the part of the Social Credit and C.C.F. "preferences". This difference may be accounted for by socio-economic factors, the adherents of the latter two parties probably being lower in income levels, occupational status and education than Conservatives or Liberals.

The accusation that the results of the city elections and

plebiscites were influenced by Social Credit policy is, therefore, somewhat belied considering that the total Social Credit vote at the city election constitutes only approximately thirteen per cent of the total poll. Admittedly, this would be sufficient to influence the outcome if there were clear indications of party influence on the direction of the vote. Contrary to predictions, however, the Social Credit "preferences" cast their vote in favour of fluoridation as frequently as the adherents of other major parties. Thus, while seventy-six per cent of the Social Crediters voted in favour, Conservatives and Liberals voted in favour seventy and seventy-four per cent respectively.

The difference between "all preferences", "the rational voters" and "no preferences" is also striking in the case of voting turn-out and voting direction. Seventy per cent of "the rational voters" cast their ballot, a percentage that is significantly different from "all preferences" of whom only forty-seven per cent voted. "No preferences", on the other hand, report a voting turn-out of only thirty per cent, a percentage differing significantly from those that expressed a political preference and reflecting their lack of interest and indifferent opinion. While the direction of the vote of the "rational voter" is similar to that of the group expressing political preferences, the "no preference" group is significantly more likely to vote <u>against</u> fluoridation on going to the polls. Thus, while seventy-one per cent of those with a preference voted for fluoridation, only forty-one per cent of those with no preference voted in this direction.

To summarize the foregoing analysis of the relations between political preference and the dependent variables, interest in fluoridation, opinion on fluoridation, voting turn-out and direction of vote,

it can be said that there is no evidence to support the hypothesis that the Social Credit party constitutes an influential factor in the formation of negative opinions on fluoridation; in fact, Social Crediters are less likely than other major party adherents to cast their ballot in the city elections. Social Crediters are as likely to be interested, to have definite opinions, to be in favour of fluoridation and to cast their vote in favour of fluoridation when they vote as are adherents of other parties.

On the other hand, significant differences were found among those who expressed a political preference, the rational voters and those who expressed no preference for any party. The latter individuals show the least interest, are more likely to be against fluoridation and less likely to have made up their mind on the issue, display the lowest rate of voting turn-out and vote against more often than for when they do turn out. If these four variables can be taken as an index of a general attitude towards public affairs then this group can be said to epitomize the apathetic element of the population. The contrast between it and the group that express political preferences strongly suggests that fluoridation is not an isolated issue but is one facet of a constellation of public affairs.

The demographic evidence that the Social Credit party was not influential in the formation of opinions on fluoridation receives further support from an analysis of the respondents' perceptions of their own party's stand. It is seen in Table XVIII that only nineteen out of the two hundred and thirteen respondents who expressed political preferences perceived their party as taking a stand on fluoridation and that all but two of these perceptions were of stands in favour of the issue. The

TABLE XVIII

POLITICAL PREFERENCE AND PERCEPTION OF RESPONDENT'S OWN PARTY'S STAND ON THE FLUORIDATION ISSUE

Political Preference	Perceptions			Total Perceptions	No. Reporting No Stand	Don't know	Totals
	No. Reporting "Pro" Stand	No. Reporting "Anti" Stand	No. Reporting stand but no direction				
Conservative	4	1	1	6	26	52	84
Liberal	2	1	1	4	13	37	54
Social Credit	7		1	8	9	39	56
C.C.F.	1			1	7	12	20
	14	2	3	19	55	140	214

hypothesis that Social Credit "preferences" would be more likely to perceive their party as taking a stand on fluoridation is supported by a tendency in this direction, fourteen per cent of the Social Crediters perceiving their party as taking a stand compared to approximately seven per cent of the other major parties. The difference, however, is not significant. Contrary to expectations, it is particularly interesting to note that not one of the Social Credit perceptions is of an opposed stand, the two perceived opposed stands being assigned to the Conservative and Liberal parties, respectively. In all cases the perceptions were congruent with the perceiver's own.

It appears, then, that the Social Crediters in the sample interpreted neither the sixty-six and two-thirds requisite majority nor the attitudes of splinter groups and individual members of the party as representing a party policy of opposition to fluoridation. In fact, the small number of perceptions suggests that political parties, generally speaking, were not related to the issue. Actually, over seventy per cent of the respondents did not know whether their party took a stand on the issue or not, a response indicating that either the relation between politics and fluoridation as suggested by the question is an unfamiliar one or that political "preference" does not necessarily imply a familiarity with party policy.

Although a few more respondents perceived political parties other than their own as taking a stand on fluoridation than perceived their own party as taking a stand, there does not appear to be a consistent pattern in the perceptions. As shown in Table XIX, only two perceptions were in a negative direction; one was attributed to the Liberal party by a Conservative "preference" and, in the other case,

TABLE XIX

POLITICAL PREFERENCE AND PERCEPTION OF "OTHER" PARTIES' STANDS ON FLUORIDATION

Political preference	Perception of "other" parties' stands								
	Conserv. Pro.	Liberal Pro.	C.C.F. Pro.	Soc.Cred. Pro.	All parties Pro.	Don't know Pro.	Liberal against	Don't know against	Totals
Conservative		1	1	1		2	1		6
Liberal	1			1	1	1		1	5
Social Credit	3	3	2						8
"Vote for the Man"				1	1				2
No preference	2								2
Totals	6	4	3	3	2	3	1	1	23

the specific party taking the negative stand was not known. The remaining twenty-one perceptions are of "pro" stands, with the Conservatives receiving six "assignments", the Liberals four, and the C.C.F. and the Social Credit three each. Two individuals thought that all parties were in favour while another respondent did not know the party that was "pro".

Contrary to expectations, more Social Crediters perceive other parties as taking a stand on the issue than Conservatives and Liberals perceive Social Credit as taking a stand. In addition, the perceptions of the Social Credit party's stand are in a "pro" direction. Finally, all but two of the perceptions of "other" parties stands' are congruent with the perceiver's own opinion on fluoridation, a finding that precludes interpretation of such perceptions in terms of rationalization of the failure of the plebiscite or expression of hostility towards out-groups.

It appears that the insights derived from the exploratory studies are not validated by the data obtained from the sample. Two factors may account for this. First, as was suggested earlier, the insights may be peculiar to those actively engaged in the campaigns: also, regulations such as a sixty-six and two thirds majority may be accepted by the public without question and with no suspicion of ulterior motives. Secondly, the question that was asked the respondents was of the "open-ended" variety and it may be that a forced choice situation would have produced a greater number of perceptions. For example, a question such as "would you say that the Social Credit party was for or against the issue of fluoridation?" would provide interesting data as to whether, in the forced choice situation, the respondent would assign a congruent or incongruent stand to an opposing or favoured party. Whether such perceptions would be derived from the nature of the question or would

form part of the structure of the individual's opinion on fluoridation is another question.

Although very few of the sample report that either their own or other parties took a specific stand on fluoridation, over fifty per cent of those with political preferences believe that political parties ought to take a stand on the issue. The distribution of the respondents' opinions as to whether political parties ought to take a stand according to their political preference, as shown in Table XX, is not significant, although there is a tendency for Liberals and C.C.F.'s to be somewhat less willing than the Conservatives and Social Crediters to accept a political pronouncement on the issue. It may be that the latter respondents, whose parties are currently in power in the Federal and Provincial governments respectively, are more willing to attribute a practical influence to their parties.

The distribution of opinions of those with a political preference and those with no political preference is also not significant, although consistent with the latter group's lack of interest in and indifferent attitude towards fluoridation, eighteen per cent of the "no political preferences" give a "don't know" response to this question as compared to only nine per cent of those with political preferences. Interestingly enough, the "rational voter" group displays the highest percentage of opinions that parties should take stands, sixty-two per cent of this group expressing this opinion compared to fifty-two per cent of those with party preferences.

It might be expected that those who are "indifferent or undecided" about the issue would be more likely to favour the intervention of a political party, thus lifting the responsibility from their own shoulders.

TABLE XX

PERCENTAGE[a] DISTRIBUTION OF OPINIONS AS TO WHETHER POLITICAL PARTIES OUGHT TO TAKE A STAND ON THE FLUORIDATION ISSUE ACCORDING TO POLITICAL PREFERENCE

Opinion as to whether party should take a stand	Political preference				All Prefs.	Rational voter	No Pref.
	Cons.	Lib.	S.C.	CCF.			
Ought take a stand	57	44	55	40	52	62	42
Should not take a stand	37	43	34	55	39	32	42
Don't know	6	13	11	5	9	6	16
Total (N)[b]	100 (84)	100 (54)	100 (56)	100 (20)	100 (214)	100 (34)	100 (108)

[a]See Table II

[b]See Table II

Alternatively, those who have a definite opinion on fluoridation may be more likely to feel that the intervention of political parties would favour their own point of view. In addition to those who were indifferent about the issue, it might be inconsequential whether parties took a stand or not. In actual fact, sixty-one per cent of those who think political parties should take a stand on the issue are definitely in favour of fluoridation, thirty per cent are "indifferent or undecided", while nine per cent are opposed. This distribution is not significantly different from the group who think that political parties should not take a stand on fluoridation.

Generally speaking, those who thought that political parties should take a stand on the fluoridation issue qualify their remarks in one of three ways. One group seems to think that by taking a stand on fluoridation, political parties would be able to help the people make up their minds - the party would, in other words, provide an authoritative source. The implication of this point of view appeared to be that the party(s) would take a stand congruent with the respondent's own and thus it would either ensure the success of the plebiscite or make sure that it failed. A second group feels that political parties should not only take a stand but should change the laws so that a plebiscite is no longer a prerequisite to fluoridation -- the implication being that the political party's action would aid the cause of the pro-fluoridationist. A third group believes that the role of the political party lies in its influence in getting the people out to vote on the issue -- this could be interpreted either as ensuring its failure or its success.

Only seventeen respondents attribute importance to their political party in making up their mind on fluoridation and only three of these

are Social Crediters. Seven are Conservatives, five are Liberals and two C.C.F.'s. The local influence of Social Credit and its potential association with the fluoridation issue do not appear to be reflected in the assignment of importance to it. Unfortunately, in not one of these cases did the interviewer request elaboration as to why the party was important to the individual but in the case of two of the Conservatives, one of the Liberals and both of the Social Crediters, the respondents also perceive their party as taking a stand on the issue. There is at least some basis to their assignment of importance to the party, albeit a perceived stand. None of those who think that their party is important is opposed to fluoridation, eleven being definitely in favour and six "indifferent or undecided".

Religion and the Fluoridation Plebiscite

Table XXI displays the relationships between the various dependent variables and the respondent's religion. It will be seen that very little difference exists between the Roman Catholics and the major Protestant groups, the Catholics showing a greater number of "moderately interested" responses but the Protestants more "very interested" responses. Fifteen per cent of the Protestants are not interested at all in fluoridation compared to eleven per cent of the Catholics. These differences are not significant. Comparing the major Protestant groups and the Fundamentalists, it will be seen that while forty per cent of the Protestants are "very interested" in fluoridation, only twenty-four per cent of the Fundamentalists are that interested. It should be noted, however, that certain of the groups defined as major Protestant for the purposes of analysis are more like the Fundamentalists in their interest pattern, the Lutherans and Presbyterian/Methodists displaying considerably fewer "very interested"

TABLE XXI

THE PERCENTAGE[a] DISTRIBUTION OF INTEREST IN FLUORIDATION, OPINIONS ON FLUORIDATION, VOTING TURN-OUT AND DIRECTION OF VOTE ACCORDING TO RELIGION

	Major Protestants						All Protestants	Roman Catholics	Fundamentalists
	United Church	Anglican	Greek Orthodox	Baptist	Presbyterian & Methodist	Lutheran			
Interest in fluoridation:									
Very interested	42	54	17	46	28	29	40	33	24
Moderately interested	52	33	61	31	48	39	45	56	57
Not interested at all	6	12	22	23	24	32	15	11	19
Total	100	99	100	100	100	100	100	100	100
(N)[b]	(94)	(57)	(18)	(13)	(25)	(31)	(238)	(73)	(21)
Opinion on fluoridation:									
Definitely for	60	58	41	69	33	29	52	40	24
Indiff. or undecided	27	26	53	15	29	48	31	48	43
Definitely against	14	16	16	15	38	23	17	12	33
Total	101	100	100	99	100	100	100	100	100
(N)	(94)	(57)	(17)	(13)	(24)	(31)	(236)	(73)	(21)
Voting turn-out:									
Voted	54	61	18	50	48	28	50	32	20
Did not vote	46	39	82	50	52	72	50	68	80
Total	100	100	100	100	100	100	100	100	100
(N)	(90)	(54)	(11)	(12)	(23)	(29)	(219)	(63)	(20)
Direction of vote									
Voted for	73	76	67	100	18	50	66	60	25
Voted against	27	24	33	0	82	50	34	40	75
Total	100	100	100	100	100	100	100	100	100
(N)	(48)	(33)	(3)	(6)	(11)	(18)	(113)	(20)	(4)

[a] See Table II

[b] See Table II

responses than say the Anglicans and United Church adherents. Thus, while over twenty per cent of all Protestant groups, except the United Church and Anglican, are not interested at all in the issue of fluoridation, only nine per cent of the latter two groups are not interested at all. It might be suggested that these differences between the Protestant groups could be accounted for in terms of socio-economic status, Baptist, Lutheran and Methodist being traditionally "lower-class" churches.[1] The use of socio-economic status as a test variable in this context does not appear to apply to the similarity between the Roman Catholics and the United and Anglican adherents.

In terms of opinions on fluoridation there is no significant difference between Protestants and Catholics in the direction of their opinion although there is a slight tendency for Protestants to be more likely to favour the issue. Protestants are, however, significantly more likely to have a decided opinion on the issue, forty-eight per cent of the Catholics being "indifferent or undecided" compared to thirty-one per cent of the Protestants. The difference between the Fundamentalists and other Protestants in terms of direction of opinion is significant at the .01 level -- only twenty-four per cent of the Fundamentalists are in favour of fluoridation compared to fifty-two per cent of the adherents of the major Protestant groups. As in the case of "interest" it will be noted that the opinions displayed by Presbyterian/Methodists and Lutherans are similar to those of the Fundamentalists.

Although the Fundamentalists are significantly more likely to be opposed to fluoridation than are other Protestants, it is unlikely

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[1]Liston Pope, "Religion and The Class Structure," in Class, Status and Power. (Reinhard Bendix and Seymour Lipset (Eds.), (Glencoe: The Free Press, 1953), 319.

that their influence on the outcome of the plebiscite is very significant. First, the number of Fundamentalists relative to the total population is probably quite small and secondly, their rate of voting turn-out is low. Only twenty per cent of the Fundamentalists in the sample report voting at the plebiscite compared to fifty per cent of the other Protestants. This difference is significant at the .01 level. Catholics also vote significantly less than Protestants, only thirty-two per cent of the Catholics claiming to vote at the city elections. Once again, Lutherans tend to be more like the Fundamentalists in their voting behaviour, only twenty-eight per cent reporting that they had voted, although the Presbyterian/Methodists report a forty-eight per cent turn-out.

There is no significant difference between Protestants and Catholics in the direction of the vote and too few Fundamentalists voted to test the difference between the distribution of the direction of their vote and that of the other Protestants.

The demographic data suggest that certain differences exist in the distribution of opinions on fluoridation and voting turn-out according to the individual's religion. In the case of voting turn-out it is doubtful whether this can be explained in terms of the religious variable although conceivably, non-participation in elections could form part of a religious sect's creed; alternatively, a church's opposition to fluoridation might be strong enough to induce it to bring pressure to bear on its members to vote. To the extent that the Fundamentalist may be militantly opposed to fluoridation, it might have been predicted that he would be certain to vote, thus actively expressing his disapproval. In actual fact, less than fifty per cent of those Fundamentalists who were definitely opposed exercised their

voting privilege. It is probable that voting delinquency can better be explained in terms of education or socio-economic status.

With respect to opinions on fluoridation, it was expected that perceptions of a respondent's own church's stand on the issue of fluoridation would provide validating evidence of religion as an explanatory variable. Table XXII shows the perceptions that were made and it will be seen that the conclusions that can be drawn from so few perceptions are of relatively little value. Only one Fundamentalist perceived his church as taking a stand on fluoridation (and this respondent, incidentally, was not a Christian Scientist) although two Presbyterian/Methodists saw their church as opposed to fluoridation. As far as is known, neither the Presbyterian nor the Methodist church have taken explicit stands on the issue and the high "anti" percentage of this group is an unexpected result. It might be remarked, however, that this group consists of somewhat older people, over half the group being over sixty, who had remained with splinter groups of these churches after the main bodies had united in the United Church. The fact that these respondents remained with the old group may signify a resistance to innovation, such resistance being explanatory of opposition to an issue such as fluoridation.

It seems, then, that direct intervention on the part of the church is not a cogent factor in the formation of "anti" opinions on fluoridation. However, sufficient peripheral evidence was recorded by the interviewers to suggest that religion is an orienting factor in a number of opinions. These opinions are derived not from the edicts of the group but rather from the complex of religious beliefs that are held by the individual. The reason given for being opposed to fluoridation in religious terms is usually somewhat conventionalized and is sufficiently

TABLE XXII

RELIGIOUS PREFERENCE AND RESPONDENT'S PERCEPTION OF OWN CHURCH'S STAND ON THE ISSUE OF FLUORIDATION

Religious preference	Number Reporting Pro.Stand	Number Reporting Anti-stand	Total Perceptions
United Church	1		1
Anglican	1		1
Presbyterian/Methodist		2	2
Greek Orthodox	1		1
Fundamentalists		1	1
Total	3	3	6

similar, from respondent to respondent, to be coded under a common category labelled "pure water theme." Such responses as, "if God had wanted fluoride in the water he would have put it there," or, "Water is God's handiwork and no one should fool with it!" are typical.

It might be suggested that, in these cases, God is a significant reference group and that His norms as the individual perceived them are adopted as the individual's opinion on fluoridation. It should be pointed out, though, that the religious argument does not always result in an "anti" opinion. One Jehovah's Witness who claimed to be in favour of fluoridation took the view that religion enters into all aspects of life -- therefore, if fluoridation is good, it must be God-sent. This expression of view is particularly interesting in light of the fact that the Jehovah's Witnesses is the group that was most often perceived as taking a specific stand against fluoridation by adherents of other

churches.

The "pure water theme" with respect to fluoridation was given not only by Fundamentalists but also by adherents of the Anglican, United, Lutheran and Presbyterian/Methodist churches. This diversity of religious affiliations suggests that the "pure water theme" is not derived from beliefs inherent to a particular creed but instead is derived from the individual's own interpretation of the role of religion in his life.

While these religious viewpoints account for perhaps twenty per cent of the definitely "against" opinions, there is a certain amount of evidence that religion is perceived by a number of pro-fluoridationists as the all important factor in the formation of "anti" opinions. As can be seen from Table XXIII, an anti viewpoint is attributed by twenty-four respondents to a number of churches. Although the United Church and Anglican perceptions of an "anti" stand on the part of the Catholic church might be interpreted as a displacement of hostility, the other perceptions appear to be based on misinterpreted fact. Thus, it might be suspected that the perception of the Jehovah's Witnesses' stand is probably derived from an association of fluoridation with this group's belief about blood transfusions; a belief that has found considerable publicity. The Christian Science perceptions are valid, although whether the perceivers knew that the Church had taken a specific stand is a matter of question. It is more likely that they derived their perception from a general knowledge of the Church's attitude towards medication in any form. The perception that the Muslim group is opposed is probably derived from the fact that the leading anti-fluoridationist in the city of Edmonton is a Muslim, although, as far as is known, this individual's mosque membership had nothing to do

with his opinion on fluoridation.

TABLE XXIII

RELIGION AND PERCEPTION OF "OTHER" RELIGIONS' STANDS ON THE ISSUE OF FLUORIDATION

Religion	Perceived religion and direction of stand				
	Catholics against	Jehovah's Witnesses against	Christian Science against	Mohammedan against	Total Perceptions
United Church	2	3	2	1	8
Anglican	2	1	1		4
Greek Orthodox	1				1
Lutheran		2			2
Roman Catholic		3	3		6
Totals	5	9	6	1	21

Supporting these perceptions is a certain amount of peripheral material which provides certain insights that might be tested more rigorously in the future. For example, one question on the schedule asked why the respondent thought that some dentists were opposed to fluoridation. At least five respondents felt that such dentists were biased against the issue because of their religious beliefs. A question which attempted to determine whether the respondent perceived certain educational, occupational, income and age groups as being associated with "pro" or "anti" opinions occasionally brought forward the response that those that were opposed to the issue could be distinguished by their religion. Such points of view were usually expressed in terms such as "only religious crackpots would be against fluoridation," or "it's only religious fanatics that don't like it," while mention was made of such specific groups as the Fundamentalists and Jehovah Witnesses. Another respondent perceived a meeting

at the Jubilee Auditorium sponsored by the local anti-fluoridation association as being "religious-sect oriented" (which, in fact, it was not) and one respondent claimed rather vaguely that "religion has a lot of control in city elections".

Although over fifty per cent of those with political preferences believe that political parties ought to take a stand on the fluoridation issue, as will be seen from Table XXIV, only twenty-four per cent of Protestants and thirty per cent of Catholics consider that churches ought to be involved in the issue. This difference between Catholics and Protestants is not significant although the tendency is strong enough to suggest that the introduction of a variable such as "religiosity" defined, perhaps, by regularity of church attendance might yield a significant difference between Catholics and Protestants.

TABLE XXIV

PERCENTAGE DISTRIBUTION OF RESPONDENTS' OPINIONS AS TO WHETHER CHURCHES OUGHT TO TAKE A STAND ON THE ISSUE OF FLUORIDATION OR NOT ACCORDING TO THE RESPONDENTS' RELIGIONS

Opinion as to whether church should take a stand	United Church	Anglican	Baptist	Presby/Method.	Greek Orth.	Lutheran	Total Protest.	Catholics	Fundamental
Ought to take stand	27	16	31	32	39	16	24	30	24
Should not take a stand	69	77	46	64	50	71	68	51	62
Don't know	4	7	23	4	11	13	8	18	14
Totals (N)	100 (94)	100 (57)	100 (13)	100 (25)	100 (18)	100 (31)	100 (238)	99 (72)	100 (21)

The percentage of Fundamentalists believing that their church should take a stand on fluoridation is exactly the same as that of the other Protestants. It may be noted, however, the percentages of "don't know" responses of this group and also of the Catholics are considerably higher than that of the other Protestants. Assuming that more Catholics and Fundamentalists are drawn from the lower socio-economic groups this finding might well be expected. The fact that the lower status individuals are "less likely to venture an opinion" is well known but whether such reluctance is based on lack of information or as Knupfer puts it, whether they feel "less competent to judge" is difficult to say.[2] In the case of the question asked, it would appear that the latter might be the case since the question required no factual information beyond the faintest connotation of fluoridation, on which to base a reply.

Once again, it is appropriate to indicate that the distribution of opinions is not homogeneous among the various Protestant groups and, although the distribution is not significant and the numbers in some of the groups small, certain patterns emerge which are of interest. For example, twenty-seven per cent of the United Church adherents give a "yes" answer compared to only sixteen per cent of the Anglicans. The United Church has a reputation for making its position on a variety of moralistic and other topics well known whereas the Anglican church is generally speaking not articulate about secular matters.

Although it seems that there is less willingness for people to acknowledge that churches ought to take a stand on fluoridation than to acknowledge that political parties do the same, more respondents state that their religion was important to them in the formation of their

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[2]Genevieve Knupfer, "Portrait of the Underdog," in Bendix and Lipset, op.cit., 255-262.

opinion on fluoridation than accord the same value to politics. The religious affiliations of these twenty-four respondent are shown in Table XXV and it will be seen that a variety of churches are accorded importance. Proportionately, no more Catholics ascribe importance to their church than do the major Protestant affiliates, and although proportionately more Fundamentalists than other Protestants ascribe more importance to their church the numbers are too small to draw any conclusions. As in the case of politics, interviewer follow-up on these responses was negligible and while four of the respondents also perceived their church as taking a stand on the issue, it is not known in what way the church was considered important to their opinion formation. However, to the extent that only two of the individuals were opposed in their opinion, it cannot be said that the church is consistently perceived as a relevant factor even in the formation of opinions that ostensibly took their viewpoint from a religious angle. The validity of the responses may be very questionable, particularly when it is considered that none of the respondents who accorded importance to religion in the formation of their opinion were undecided in their opinion.

TABLE XXV

RELIGION OF RESPONDENTS WHO DESCRIBE THEIR CHURCH OR RELIGION AS BEING IMPORTANT TO THEM IN THE FORMATION OF THEIR OPINION ON FLUORIDATION

Religion	No. describing their church or religion as important to them
United Church	7
Anglican	2
Presbyterian/Methodist	2
Greek Orthodox	3
Lutheran	2
Roman Catholic	5
Fundamentalists	3
Total	24

CHAPTER VII

DISCUSSION AND CONCLUSIONS

This chapter discusses the results presented in Chapters V and VI and evaluates the study in terms of the problems as originally defined. It presents some of the shortcomings of the study and indicates further lines of research that might be profitable.

THE FLUORIDATION PLEBISCITE AS A SPECIAL CASE OF VOTING BEHAVIOUR

It will be remembered that the original focus of this section of the study was on the testing of generalizations derived from the literature on voting in the situation of a local, non-political plebiscite. Questions were asked as to whether the population of interested people and voters were similar in terms of social characteristics to those, for example, of a presidential election. It was further asked which social characteristics distinguished those who were in favour of fluoridation, those who were opposed and those who were indifferent and undecided.

The results as presented in Chapter V show that, generally speaking, the generalizations derived from the literature appear to hold in the local, non-political situation. With respect to interest in fluoridation, the same people who are interested in fluoridation are also interested in politics and other public issues and the distribution of interest occurs along age, educational and socio-economic

lines. The linearity of the age distribution is partly obscured by the fact that younger individuals display more interest in fluoridation than was predicted, probably because of the inherent nature of the issue.

Unlike the conventional finding of voting studies, men and women are equally interested in fluoridation. While this could be explained by a cultural difference between the United States and Edmonton, Canada, analysis of the distribution of interest in politics according to sex reveals that women are significantly less interested in politics than are men. Thirty-one per cent of the men are very interested in politics compared to only fifteen per cent of the women. The distribution of interest in politics according to sex is significant at the .01 level. It seems, therefore, that the issue of fluoridation has a particular interest for women, over and beyond that of the usual public affairs.

The finding that women are as interested as men in the fluoridation issue is reflected in their voting turn-out and, contrary to findings in the United States, there is no significant difference between the voting turn-out of men and women in the fluoridation plebiscite. Analysis of the voting turn-out at the federal election reveals that seventy-five per cent of the men report voting compared to sixty-nine per cent of the women. This tendency towards greater voting turn-out at the federal level on the part of the men approaches significance at the .05 level and lends support to the hypothesis that fluoridation has a particular interest for women.

Any findings in connection with the voting turn-out must be qualified since the percentage reporting voting at the plebiscite

significantly exceeded the actual percentage vote. It was suggested in Chapter V that the sample was biased in favour of voters because the majority of replacements and mortalities occurred in districts which had been shown to have a "lower than average" voting rate. In addition, a large proportion of the ineligible to vote were also drawn from these districts. If this argument has any validity, then the amount of dissembling is relatively small and, further, the present tendency towards the higher the occupation and the higher the income, the greater the turn-out, may be strengthened into a significant difference.

One rather limited check on the respondent's report of his voting behaviour is available in the data: since non-property owners are ineligible to vote on the money by-laws, a report by a non-property owner that he had actually voted on these money by-laws would represent a false statement. It might be inferred that inaccuracy with respect to this response would render other reports of voting suspect. In actual fact, only four respondents who were ineligible to vote on the money by-laws reported voting on this part of the ballot.

Bearing in mind the above qualifications, it can be said that the higher the educational level, the higher the turn-out. Property owners are more likely to turn out than are non-property owners. Since it was expected that the differentiation between polling divisions would be reflected in significant differences in the distribution of turn-out according to occupation and income, it is surprising to find that there is only a strong tendency for the higher occupational and income levels to be associated with voting turn-out. The biasing of the sample in favour of voters may account for this. On the other hand,

if the argument were valid that dissembling on the voting question would be more likely in the higher socio-economic levels because of greater social pressures to vote, correction for this would reduce the difference between the low and high socio-economic levels in terms of voting turn-out.

Distribution of the voting turn-out according to age reveals a very strong tendency towards the older the individual the more likely that he is to vote, with a tendency to reversal at the age of eighty. By taking the polar groups, that is the "under forty" and "over sixty" groups, a significant difference can be demonstrated. There is no doubt, however, that the voting turn-out of the younger age groups is greater than might have been anticipated and whether this can be accounted for by the inherent nature of the fluoridation issue or by cultural differences is a question for further analysis. It is noteworthy that people with families under school age vote less than do people with older families. Since these people are probably younger than the other groups, this may be accounted for by age and also by the fact that to go to the polls represents, in many cases, a greater effort for families with very young children than for those with older children.

The relevance of the factor of the age of children in voting turn-out can be verified by using another variable as a test variable. Analysis of the voting turn-out according to the age of the youngest child within occupational categories provides a test of the relevancy of the age of the children. Although the numbers are too small to permit statistical evaluation in the "professional,"

"white collar" and "unskilled" categories, it is interesting to observe that, within the "skilled and semi-skilled" category, the age of children is predictive as to whether the individual turned out to vote. Thus, while fifty-eight per cent of those with grown-up children reported voting at the plebiscite, only thirty-four per cent of those with pre-school children exercised their voting privilege. This difference is significant at the .01 level. On the other hand, professional people with pre-school children are no more likely to vote than semi-skilled people with pre-school children. In other words, the age of children is a significant factor in voting turn-out regardless of socio-economic status.

Turning to opinions on fluoridation, it was found that forty-nine per cent of the sample were in favour of fluoridation, seventeen per cent opposed and thirty-four per cent indifferent or undecided. These figures may be compared with those of a recent survey undertaken in the Fall of 1959 by the National Opinion Research Center, Chicago, using a nationwide sample. In this survey, sixty-five per cent of the respondents were in favour of fluoridation, twelve per cent against and twenty-five per cent indifferent or undecided.[1]

The distribution of the opinions on fluoridation is significantly differentiated by a number of social characteristics. Individuals under fifty years of age, with high school education or better, income over $5,000 and in the "white collar" and professional

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[1]Commission of the Survey of Dentistry in the United States, "Marginal Results and Basic Cross Tabulations - Public Attitudes and Practices in the Field of Dental Care," National Opinion Research Center, University of Chicago (Mimeographed), June, 1960, Survey 423.

occupational groupings are most likely to be in favour of fluoridation. People with young children are more likely to be in favour than people with grown-up families. Men and women are equally likely to be in favour of fluoridation but the individual who owns property is less likely to be in favour of fluoridation than the person who does not. These findings appear to agree with other studies but it is interesting to note that a Harvard School of Public Health group comments on the demographic regularities in the distribution of fluoridation opinions as follows:

> A good deal is now known about the social characteristics of people who vote for and against fluoridation. Unfortunately, what originally seems like a clear-cut relationship has on further study frequently appeared more complicated ..... results have sufficient divergencies to suggest that sub-populations among both proponents and opponents of fluoridation must be differentiated.[2]

The divergencies mentioned in this article occur with a number of social characteristics: thus, in Fairfield, California, white collar respondents were the least favourable of all occupational groupings and the "41-50" age group was the least favourable of any of the age groups. In Cambridge, Mass., those with less then eighth grade education and those with college education were most in favour of fluoridation but those with "medium" education were not so likely to be in favour. Age also was not distributed linearly.

This variety of findings could be accounted for by many factors, among which might be listed cultural differences, differences in the conduct of the campaigns, differences in measurement technique, sampling

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[2]William A. Gamson and Carolyn G. Lindberg, "An Analytic Summary of Fluoridation Research: with an Annotated Bibliography," Working Document 21, Social Science Programme, Harvard School of Public Health (Mimeographed), October, 1960, 1-3.

errors and a number of local factors such as the water supply, community leaders and so on. Ignoring these differences, however, the question arises as to the significance of any demographic regularities that may be found in the distribution of opinions on fluoridation. As was remarked in Chapter I, the demographic approach in terms of single social characteristics represents but a starting place for a more refined analysis. For example, the finding that property owners are more likely to be opposed to fluoridation than are non-property owners poses an explanatory problem. With the assumption that those who rent are likely to be younger than are those who own houses, the distribution of opinions on fluoridation was analysed according to property ownership within age categories. It was found that those individuals over fifty who do not own property are no more likely to be in favour of fluoridation than those who own their own houses and similarly, those under fifty owning houses are no more likely to be opposed to fluoridation than those renting houses. In this way, property ownership can be demonstrated to be a spurious factor in the differentiation of "for" and "against" opinions.

Naturally, it can be asked whether age is a critical variable and while explanations can be advanced that the older the individual the less likely that he is to favour innovations, particularly of a controversial nature, such an explanation requires validation. Since older people are probably less likely to have had as many years of education as the younger generation, the relevance of age may be partly determined by whether it distinguishes between those "for" and those "against" fluoridation within categories of education. In actual

fact, analysis of the distribution of opinions on fluoridation in terms of age within categories of education reveals that people over fifty with high school education are significantly less likely to be in favour of fluoridation than are people under fifty with high school education. With education controlled, age still differentiates between those "for" and those "against" fluoridation.

Of course, it is not to be expected that any one single characteristic of the type that has been used in this study will completely differentiate between "pro" and "anti" opinions on fluoridation and the examination of the inter-relationships between the variables is an obvious next step in follow-up research. Among the many relationships between the various characteristics that could be analysed it is sufficient here to indicate the direction in which further analysis might be profitable. If only one characteristic can be selected as the test variable the one that would seem to have most interest for sociological research would be some index of socio-economic status. Most studies have reported that an anti-fluoridation opinion is associated with low income and low occupational level and in view of the evidence that the lower class do not take advantage of opportunities to better their lot, the anti-fluoridation attitude may well be a sub-cultural trait. Arnold Simmel hypothesized that opposition to fluoridation is "an expression of hostility deriving from some sense of deprivation" and demonstrated that people who oppose fluoridation have "low incomes, low occupational status, hold statuses which are divergent in terms of social evaluation, and are lower in feelings of political efficacy."[3] At the risk of misinterpreting Simmel, it might be said

[3]Gamson and Lindberg, op.cit., 26.

that the lower class tend to resist fluoridation because it is a measure proposed by authority rather than because of its intrinsic nature.

The role of socio-economic status in the distribution of opinions on fluoridation can be shown by comparison of the distribution of opinions according to occupation within the categories of a variable that has been shown to differentiate opinions on fluoridation. For example, the question might be asked as to whether those people with school age children are consistently in favour of fluoridation regardless of their socio-economic status. Analysis in these terms shows that "white collar" and professional people with school age children are significantly more likely to be in favour of fluoridation than are the skilled and semi-skilled, who also have children of school age. At the same time, it also should be pointed out that within an occupational category, the age of the children differentiates those who are "for" and those who are "against."

RELIGIOUS AND POLITICAL FRAMES OF REFERENCE

The general problem of this section of the thesis was concerned with people's perception of the issue and with major factors that influenced their perception. On the basis of exploratory studies two particular frames of reference, the religious and the political, were selected as having special interest.

The question was posed as to whether the anti-fluoridationist opinion was commonly seen in religious or political terms, the inference being from the exploratory studies that these frames of reference would account for a good proportion of anti-opinions. In the case of those

opinions that were held in religious or political terms it was hypothesized that religious and political groups would be significant reference groups in the formation of opinions on fluoridation.

In the light of the exploratory studies it was asked whether pro-fluoridationists attributed the opinion of the anti-fluoridationist to political or religious bias. Further, the question was raised as to whether such a perception of the anti-fluoridationist opinion could be considered a rationalization of the failure of the plebiscite, a projection of hostility towards an out-group or a recognition of objective fact.

According to the results presented in Chapter VI the political frame of reference does not appear to be cogent to the fluoridation issue. There were very few perceptions of stands on the part of the political parties and there was no evidence to support the hypothesis that the Social Credit party was an influential group in the formation of anti-opinions; nor was there any evidence to suggest that this conception of the role of the Social Credit party was held by the general population.

On the other hand, approximately twenty per cent of the anti-fluoridationists perceived the issue within a religious frame of reference, suggesting that this frame of reference is cogent to the fluoridation issue. In the majority of these cases the church as a group did not seem to play a significant part in the formation of the opinion, the anti-fluoridationist viewpoint arising out of the individual's religious beliefs. A number of pro-fluoridationists recognized the religious frame of reference as a significant one for the anti-fluoridationist, and although stands on the fluoridation

issue were not consistently assigned to any one particular religion; the Jehovah's Witnesses and the Christian Science sects were those most often implicated.

These results suggest an inherent weakness in the development of the hypotheses and in their testing. The derivation of hypotheses from the insights of those who were actively engaged in the issue led to the assumption that the general public, whether for or against the issue, would have a structured opinion similar to that of the protagonist. The protagonist was aware, not only of all the arguments in support of his side of the issue, but he was also very much concerned with the structure of the opinions of the opposition. The assumption that anyone who had an opinion either for or against fluoridation would have a similarly structured opinion on the issue was implicit in the development of the hypotheses in this study. It seems, however, that opinions on fluoridation are, generally speaking, of a simple "for" or "against" variety without the ramifications presupposed by the nature of the hypotheses. For example, it may seem surprising that not one of the sample, whether for or against fluoridation perceived the sixty-six and two-thirds per cent majority requirement as an index of a negative stand on the part of the Social Credit party; this perception seemed to be the kind that would be most likely to occur in an issue of this nature. In retrospect it would not be surprising if most of the voters did not know the majority requirement. Further, even if they did know, it seems likely that the requirement would be accepted without question, very few being familiar with the genesis of the ruling. In this respect the application of social psychological

theory in the prediction of the direction and congruency of the perception was somewhat premature.

Although the data did not permit an adequate test of some of the hypotheses, a number of conclusions can be drawn:

1. The insight of partisans into the opinions and opinion formation of the general public on an issue such as fluoridation is likely to be coloured by the spectrum of opinions that they themselves hold.

2. Although significant differences occur in the distribution of opinions on fluoridation according to religion, these can be accounted for by differences in socio-economic status. The evaluation of fluoridation in religious terms is not characteristic of any one religion, nor of any group of religions, and the orientation towards the perception of the issue in religious terms is derived from individual interpretation of religious beliefs rather than from any edict on the part of the churches. It is noteworthy that even the Christian Scientist, whose Church appeared before Congress with a specific stand on the issue, did not attribute a stand to his church. The religious interpretation of fluoridation appears to be recognized by pro-fluoridationists as a major factor in the anti-fluoridationist viewpoint although, in actual fact, it is by no means the only predisposing factor to an anti-fluoridation opinion. The accusation that the religious viewpoint has a great deal of impact on the plebiscite appears to be unjustified since those who interpret fluoridation in religious terms are less likely to vote than are other people.

3. While the hypothesis that political affiliation would distinguish the "pro's" from the "anti's" was not supported by the data, of

significance is the unexpected finding that those who express a political preference are more likely to be interested in fluoridation, to be in favour of fluoridation, to have an opinion on the issue, and to turn out to vote than are those who have no political preference. These results lend support to the hypothesis that the voters at a fluoridation plebiscite constitute a population similar in composition to a political election. Further, it seems that fluoridation is not a unique issue but may validly be considered as but one issue of a complex of public affairs, although this conclusion might be qualified in terms of the distribution of interest in fluoridation according to sex.

4. Although there is no difference between the "party preferences" in their opinions as to whether political parties should take a stand on the issue of fluoridation, the fact that fifty per cent of the sample thought that they should take a stand on fluoridation suggests that governmental administration of health measures is acceptable to a significant part of the population. On the other hand, only thirty per cent of the sample thought that their church should take a stand on fluoridation. Since the association between religion and fluoridation has appeared to be generally in connection with an "anti" viewpoint, it would be of interest to follow up the thirty per cent who considered that their church ought to take a stand.

SOME GENERAL THEORETICAL CONSIDERATIONS

The foregoing discussion of the results of the present study suggests some general theoretical considerations relative to the broader field of sociology.

The demographic approach is derived from the general proposition

that any behaviour is differentially distributed in a given population according to specified social characteristics. This is generally viewed as a first step in the research process and an explanation of the occurrence of demographic regularities usually follows. The explanation of demographic regularities presents three major explanatory difficulties, all of which have been experienced in this study.

First, explanations are often on an ex post facto basis with little or no validation. Thus, Lipset's explanatory framework is speculative rather than derived from empirical studies.[4] Further there is an inherent risk that when a prediction of a demographic regularity is made on the basis of an explanatory framework, the confirmation of the regularity may be taken as validation of the basis on which the prediction is made. For example, the predicted finding that women are more likely to vote at a fluoridation plebiscite than they are at a federal or provincial election does not necessarily validate the basis for the prediction -- that is, that fluoridation has a particular relevance to women.

Secondly, explanation of regularities in terms of a single variable presents only part of the picture. As has been shown in previous discussion, an analysis of the interaction of a number of variables is critical to explanation of the regularities.

Thirdly, the question arises as to whether the explanation offered should be in terms of the inherent nature of the characteristic itself or whether the characteristic stands for a sub-cultural

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[4]Seymour M. Lipset, et al., "The Psychology of Voting: An Analysis of Political Behaviour," in Gardner Lindzey (ed.), Handbook of Social Psychology, (Cambridge: Addison Wesley Publishing Company, 1954), 1128.

patterning of behaviour. The most relevant example of this problem centers on class theory. Given a differentiation along class lines, the question can be asked as to whether this can be explained in terms of class in the "class-consciousness" sense or whether the differential can be attributed to a sub-cultural patterning of that particular behaviour. For example, given a higher percentage of anti-fluoridation opinions in the lower classes, can this be attributed to "class-consciousness" or to a sub-cultural pattern that arises out of a number of factors such as education, exposure to mass media, communication problems, etc.? Arnold Simmel's "relative deprivation" hypothesis may be interpreted as explaining lower class anti-fluoridation opinions in "class-consciousness" terms.[5] On the other hand, the predominance of "no opinion" and complete indifference to the fluoridation issue in the lower classes might more properly be explained within a sub-cultural framework.

The fact that voting behaviour is distributed differentially in the population can be interpreted in terms of its effect on decision-making within the society or community. Assuming the common value that decisions of importance to the society or community should be participated in by all members of the society (within certain limits such as age), the differential distribution of voting behaviour and a generally low voting turn-out suggest that the ideal democratic decision is far from a reality. The failure of a large part of the population to participate in an election could be considered to constitute evidence of social disorganization or political "anomie," although

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[5]Gamson and Lindberg, op. cit.

Powell's statement that the non-voter can be considered an anti-democratic element in society constitutes an extreme view.[6] Voting turn-out with reference to social disorganization is probably better viewed in terms of changes in rates of turn-out rather than in terms of any absolute rate.

The findings of the present study seem to indicate that voting may be a habit, a pattern of behaviour that is acquired more easily in the home-owning, community-minded, middle class culture than in the traditionally apathetic lower class. Although lack of formal education, mass media communication problems in terms of sub-cultural language barriers, less leisure time and high incidence of foreign languages can all be offered as reasons for the non-participation of the lower classes in public affairs, it is more appropriate to focus on the relative lack of sub-cultural norms relating to political behaviour within the lower classes or on the different norms relative to this behaviour compared to the middle and upper classes. The process of socialization within these classes does not involve an orientation towards the large society with the result that interest and participation in community affairs is not a behaviour pattern characteristic of lower class sub-culture.

Assuming that fluoridation is as safe and efficacious as claimed by its proponents and that the objections of a minority on the grounds of mass medication, "pure water," and civil rights can be discounted, the failure of the plebiscites may be considered to constitute a social problem. It appears that the population is, in effect, being deprived of a benefit that would relieve pain, inconvenience, poor health and financial burdens. Two factors contribute to this state of

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[6]Inge B. Powell, "The Non-Voter -- Some Questions and Hypotheses," Berkeley Publications in Society and Institutions, I (1955), 25-35.

affairs; 1) the sixty-six and two-thirds per cent majority requirements, for which there seems no rational justification, and 2) the fact that the issue is up for plebiscite at all, when, in fact, fluoridation could be conceived as a measure which should rest in the hands of experts.

The problem is further high-lighted by the fact that those who oppose the issue and those who have no opinion are largely drawn from those who need it most -- the lower classes. The "no opinion" response is characteristic of the lower classes and whether this can be explained in terms of lack of material with which to form an opinion or a fear of expressing an opinion, the fact remains that the lack of opinions on most subjects constitutes a sub-cultural pattern of behaviour.[7] As in the case of voting turn-out, it might be argued that the socialization process of the lower class child does not include the development of concern about the world beyond a satisfaction of immediate needs.

Little light has been thrown on the process of opinion formation in the present study, a deficiency which may be attributed, in part, to the fact that the process of formation and changes in time were not observed. Several facets of opinion formation are, however, emphasized in the study. First, it appears that opinions on fluoridation are probably not based on a factual knowledge of the issue -- this may be compared to the finding that only one-third of the voters in a presidential election knew where their candidate stood on the issue.[8] This tends to emphasize the role of a

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[7]Genevieve Knupfer, "Portrait of the Underdog," in Bendix and Lipset, op. cit., 255-62.

[8]Bernard Berelson, Paul F. Lazarsfeld, and William N. McPhee, Voting (Chicago: The University of Chicago Press, 1954), 344.

pre-established frame of reference into which a public issue is fitted. Thus for many people, and probably the majority of those with definite opinions, the issue has never represented a controversy or a problem in opinion formation. The conception that the issue is presented in its many facets, that the individual makes a cognitive evaluation, perhaps turning to a significant group for the adoption of its norms, is probably not justified. The situation might be analagous to the difference between two rats faced with a maze-running problem. The one rat on the basis of past experience, or a "cognitive map," runs the maze without hesitation. The other rat hesitates at the choice-point, selecting his direction on the basis of a particular cue. In the case of the former rat, the presence of the cue may present validation of the choice, but the choice is not primarily based on the cue. In the case of fluoridation, this theoretical approach explains why political and religious groups are not perceived as taking a stand on the issue. The Christian Scientist does not have to refer to his church for norms on the issue since, in effect, his frame of reference or cognitive map is "built-in."

On the other hand, there was some evidence that some individuals adopted their opinion from personal contacts, such as the woman who was in favour of fluoridation because her son-in-law, a dentist, was in favour of it, or from some public, significant figure, such as in the cases of the five respondents who claimed to take their anti-stand from Gordon Sinclair, a well-known television panelist, who, they claimed, expressed opposition to the issue on one of his programmes. These individuals presumably had no pre-existing frame of reference in which to place fluoridation.

There is, then a distinction to be made between opinion formation in terms of a pre-existing frame of reference and opinion formation in which the frame of reference is established subsequent to the presentation of the issue. In the former case, opinion change would involve change of the underlying frame of reference -- in terms of social action this presents a difficult task. On the other hand, the lack of a frame of reference presents fertile ground for emotional and "scare" propaganda.

The foregoing general theoretical considerations derived from the present study suggest certain weaknesses and shortcomings in the research reported here. On the other hand, the heuristic value of the findings can be expressed in some suggestions for future emphases in research on the problem of fluoridation.

SOME SHORTCOMINGS OF THE STUDY

In the foregoing discussion several shortcomings in the study have been touched upon; these may be summarized as follows:

1. The lapse of time between the fluoridation plebiscite in October, 1959, and the survey which took place over an extended period between June and October, 1960, may account for the fact that, for perhaps a majority of the sample, fluoridation was a "dead" issue. As one respondent said, "why don't you ask me about something interesting -- like divorce. I could tell you lots about that!" It might be suspected that an issue such as fluoridation does not have continuing attraction as a controversial issue and that once the biennial battle (in Edmonton) is over, interest in the issue is quite superficial until revived again. In addition, many of the questions

required recall of specific facts and details and, no doubt, the lapse of time accounted for the many "don't know" responses.

2. The assumption that wide mass media coverage, public education programmes, and emotional appeals would be reflected in knowledge about and structured opinions on fluoridation probably is not justified, even if the survey were to have taken place during the heat of the campaign. Included in the schedule were a number of "true and false" questions about fluoridation which it was hoped would give some index of people's knowledge of the factual information concerning fluoridation. Twenty-five per cent of the sample were not able to answer the questions at all, while in very few cases were more than one or two questions answered. It is true that many respondents were reluctant to tackle the very lengthy list of questions presented to them at the end of a long interview; in addition, the questions may have required too exact information such as the cost of water fluoridation and the quantity of fluorine which was considered safe in the water. Nevertheless, comments recorded by interviewers suggest that fluoridation is somewhat nebulous to the majority of citizens. Comments such as, "this just isn't my field," "I leave all this stuff to the doctors" and "I really don't worry about all these details" suggest that respondents never would be concerned with particular information about the issue.

In view of the lack of information and structured opinions on fluoridation the use of open-end questions in the testing of specific hypotheses probably was not justified. The use of forced-choice questions, as has already been suggested, would have facilitated the testing of those hypotheses, for example, predicting the congruency of

the respondent's stand on fluoridation with his perception of the stands of "in" and "out" social groups.

3. The sample was too small to carry out analyses beyond those required by the research hypotheses. The few multivariate analyses that have been carried out in this study have run into difficulties due to too few cases in the cells. For example, out of the sample of three hundred and seventy-four, only one hundred and forty-one cases were available for analysis of the direction of opinion on fluoridation. Analysis using two or more independent variables, each with six or more categories, is obviously impractical.

Further, too few cases occurred of minority groups, such as Fundamentalists, to draw any reliable conclusions from the data. Since the focus of attention in a number of the hypotheses was on these groups, these hypotheses might better have been tested using selected samples from the various churches or from known political adherents. For example, a sample of Pentecostalists could have been compared with a sample of Anglicans, while the Christian Science point of view would have been an interesting case study.

SUGGESTIONS FOR FURTHER RESEARCH

While the foregoing study has answered some of the questions that have been posed, it also has raised a number of problems both with specific reference to the issue of fluoridation and to peripheral and associated areas.

1. The data gathered for this study has not been exhausted in this thesis and a number of multi-variate analyses have been suggested that might be carried out. The role of socio-economic status in

opinions on fluoridation might be explored using this technique, although if occupation were to be employed as an index of social class, a somewhat more accurate classification than that employed in this study would be required. The NORC occupational ratings might be suitable for this purpose, although the question of the validity of these American ratings in the Canadian situation arises.

2. It has been suggested that the habitual voter appears to represent a type which might be named "the solid citizen." Analysis of the data to determine what social characteristics distinguish the casual or "once in a while" voter from the individual who casts his vote at every opportunity might be of some contribution to a voter typology.

The wide spread in voting turn-out between the federal elections and the city elections presents an interesting problem in voter motivation. When the issues at the city election are as interesting to the voter as those at the federal election, why does the citizen not turn out to the city election?

3. The criticism concerning the time lapse between the plebiscite and the survey indicates that information needs to be gathered either in the heat of the campaign or shortly afterwards. The use of the panel type survey would be the technique of choice since it would yield information on opinion formation and change, mass media exposure and perceptual phenomena.

4. The question arises as to whether fluoridation is a unique issue or whether it is one of a syndrome of public health issues. There is some evidence that an anti-opinion on fluoridation is often associated with opposition to other health measures such as

pasteurization, vaccination, chlorination, etc., but whether this represents the "partisan" or the general point of view is not known.

5. As suggested in the analysis of some of the shortcomings of this thesis, case studies of particular groups and their opinions on fluoridation might provide certain insights not accessible from a city-wide survey.

6. The focus of much of the fluoridation research has been on the "anti" opinion with special reference to the leaders of the campaigns. Little attention has been paid to the pro-fluoridationist and his opinion and there appears to be implicit recognition in the studies that the "pro" opinion is "right" and therefore needs no explanation. It was suggested earlier that the fact that the issue is placed before the people may be interpreted as an implicit approval by the government, the plebiscite merely being a democratic formality with a vociferous minority of "crackpots" representing the opposition. Do pro-fluoridationists have factual information on the subject or, like the anti-fluoridationist who casually brandishes the label of "rat-poison!," are they only vaguely aware of the various connotations of fluoridation? The findings of the present study would indicate that this might very well be the case and this is further supported by the Harvard studies which reported that at least twenty-five per cent of those professing to be in favour of fluoridation thought that it was concerned with water purification.[9]

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[9]Gamson and Lindberg, op. cit., 3.

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APPENDIX A

SPECIMEN SURVEY SCHEDULE

Polling Division _____

Address _____

Interviewer _____

Call No.	Date	Not Home	Refusal	Time of Call Back
1				
2				
3				
4				

PROJECT ADA

University of Alberta — June, 1960

Introduction: We are making a survey for the University of Alberta and you have been chosen as one of a number in the city for interviewing. We would very much appreciate your opinions on these questions. May I come in?

Schedule:

1. Sex: (Circle one) M F
2. Age: _____
3. How often do you read the Edmonton Journal?
   - Never (rarely)..... ____
   - Several times a week..... ____
   - Daily..... ____

   (If never (or rarely) reads the Journal, proceed to question No. 8)

4. All people aren't interested in the same things in the paper, so I would like to get an idea of the kind of things which interest you. For instance, how about the front page news, do you:
   - Read none of it..... ____
   - Read the headlines only.... ____
   - Read some of it..... ____
   - Read most of it..... ____
   - Read all of it..... ____
   - Don't know..... ____

5. How about editorials, do you:
   - Read none of them..... ____
   - Read some of them..... ____
   - Read most of them..... ____
   - Read all of them..... ____
   - Don't know..... ____

6. How about letters to the editor, do you:
   - Read none of them..... ____
   - Read some of them..... ____
   - Read most of them..... ____
   - Read all of them..... ____
   - Don't know..... ____

7. What about advertisements, do you:
   - Read none of them..... ____
   - Read some of them..... ____
   - Read most of them..... ____
   - Read all of them..... ____
   - Don't know..... ____

8. Are you familiar with the term "fluoridation?"
   - Yes..... ____
   - No..... ____

   (If no, read following definition, repeat if requested throughout interview. Answer any factual questions.)

   Fluoridation is the addition of fluorine to the city drinking water.

(If never reads Journal, proceed to No. 17.)

9. The issue of whether to fluoridate the Edmonton city drinking water came up in the voting last October. Have you read anything about this issue on the front page of the Edmonton Journal?

No.....
Yes.....
Don't know.....

10. (If yes): Was it in favor of fluoridation or against fluoridation?

In favor of .....
Against.....
Some of each.....
Neutral.....
Don't know.....

11. Have you read anything about it in the editorials?

No.....
Yes.....
Don't know.....

12. (If yes): Was it for or against fluoridation?

For.....
Against.....
Some of each.....
Don't know.....

13. Was any in the letters to the editor?

No.....
Yes.....
Don't know.....

14. (If yes): Was it for or against fluoridation?

For.....
Against.....
Some of each.....
Don't know.....

15. Did you read any advertisements in the Journal about fluoridation?

No.....
Yes.....
Don't know.....

16. (If yes): Were they for or against fluoridation?

For.....
Against.....
Some of each.....
Don't know.....

17. Do you have a television set?

No.....

(If no, proceed to question No. 20)

Yes.....

18. Do you watch TV programs:

Daily.....
Several times a week....
Less than once a week..
Not at all.....

(If "not at all", proceed to question No. 20)

19. What time of day do you usually have TV on?

Afternoons.....
Evenings.....
Both.....

20. Have you seen any programs dealing with the fluoridation issue either on your own set (if an owner) or elsewhere during the past year?

No..... ____
Don't know..... ____

(If "no" or "don't know", proceed to No. 25)

Yes..... ____

---

21. Among what you saw, did you see a speaker or a group discussing the issue?

No..... ____
Don't know..... ____
Yes..... ____

22. (If yes): Was the program generally favoring fluoridation or opposing it?

Favoring..... ____
Opposing..... ____
Some of both..... ____
Don't know..... ____

---

23. Did you see any advertisements about fluoridation on TV?

No..... ____
Don't know..... ____
Yes..... ____

24. (If yes): Were they for or against fluoridation?

For..... ____
Against..... ____
Some of each..... ____
Don't know..... ____

==========

25. Do you have a radio?

No..... ____

(If no, proceed to question No. 34)

Yes..... ____

---

26. Do you listen to the radio:

Daily..... ____
Several times a week... ____
Less than once a week.. ____
Not at all..... ____

(If "not at all", proceed to question No. 34)

---

27. What time of the day do you generally have the radio on?

Mornings..... ____
Afternoons..... ____
Evenings..... ____
All day..... ____
For specific programs only.. ____

---

28. Have you heard anything about fluoridation on the radio news?

No..... ____
Don't know..... ____
Yes..... ____

29. (If yes): Was it favoring or opposing fluoridation?

Favoring..... ____
Opposing..... ____
Neutral..... ____
Some of each..... ____
Don't know..... ____

---

30. Among what you heard, were there any speakers or groups discussing the issue?

No.....

Don't know.....

Yes.....

31. (If yes): Were the programs generally in favor of fluoridation or against it?

In favor.....

Against.....

Some of each.....

Neutral.....

Don't know.....

32. Did you hear any advertisements on the radio about fluoridation?

No.....

Don't know.....

Yes.....

33. (If yes): Were they for or against fluoridation?

For.....

Against.....

Some of each.....

Don't know.....

34. What is your marital status? Are you:

Single.....

Married.....

Widowed.....

Divorced.....

Separated.....

(If single, proceed to question No.42)

35. Do you have children?

No.....

Yes.....

36. (If yes): What are their ages? (Indicate number of children in each category):

0 - 5 .....

37. 6 - 12.....

38. 13 - 15.....

39. 16 - 18.....

40. 19 - 20.....

41. 21 and over.....

42. Do you rent or own your home?

Rent.....

Own.....

43. (If rent): Do you pay property taxes of any kind in Edmonton?

No.....

Yes.....

44. (If male or single female): What kind of work do you do? (Be specific)

45. (If married female): What kind of work does your husband do?

Don't know.....

46. Do you (your husband) work:

In your (his) own business....

For a private employer.....

For the government.....

Don't know.....

- 5 -

47. How much schooling have you had?

Number of years of public (private).....___

Number of years of technical (business).....___

Total.....___

Don't know.....___

48. What is the broad income group in which your approximate total family income for 1959 fell? By total family income we mean all income of head of family plus income of all relatives living in the household.

(Hand respondent income card)

What is the number of the group in which your family income fell?..___

49. What is your religion?

United Church	___	Christ. Reformer	___
Anglican	___	Church of Christ	___
Roman Catholic	___	Jehovah's Witness	___
Baptist	___	1st Ref.Ch.Amer.	___
Presbyterian	___	Unitarian	___
Gk. Orthodox	___	Jewish	___
Lutheran	___	Prot.Unaffiliated	___
Christ.Science	___	No Religion	___

Other:_____

50. How often do you attend church and church activities?

More than once a week.....___

Once a week (regularly).....___

Once or twice a month.....___

Sporadically (a couple of times a year).....___

Never.....___

51. Does your church or religion take a particular stand on the fluoridation issue?

No.....___

Don't know.....___

Yes.....___

52. (If yes): What stand do they take?

For.....___

Against.....___

Don't know.....___

53. Did your church have anything to say on the fluoridation issue?

No.....___

Don't know.....___

Yes.....___

54. (If yes): Was it for or against? (e.g. injunction to vote)

For.....___

Against.....___

Impartial.....___

Don't know.....___

55. Do you think that churches should take any part or have anything to say about an issue such as fluoridation?

No.....___

Don't know.....___

Yes.....___

(If "no" probe for force of response; e.g. none of church's business.)

(If "yes" probe for direction of church's influence; e.g., religious beliefs on fluoridation issue or injunction to vote.

- 6 -

56. Did any of the churches or religions other than your own, take a particular stand on the fluoridation issue?

No.....
Don't know.....
Yes.....

57. (If yes): Which religions would you say were for fluoridation and which against?

Religion	For	Against	Don't Know

58. How do you think people of the same religion as you voted on the fluoridation issue?

Mostly for.....
Against.....
Some of each....
Don't know.....

59. What is your political party preference?

Conservative....
Liberal.....
Social Credit...
C.C.F.....
Haven't any.....
Don't know.....

60. Did you vote in the last provincial election?

No.....
Yes.....
Don't know.....

61. (If yes): For which party did you vote?

Conservative.....
Liberal.....
Social Credit.....
C.C.F.....
Refuses to divulge party.....

62. Did you vote in the last federal election?

No.....
Yes.....
Don't know.....

63. (If yes): For which party did you vote?

Conservative.....
Liberal.....
Social Credit.....
C.C.F.....
Refuses to divulge party.....

64. Did you vote in the last city election?

No.....
Yes.....
Don't know.....

65. (If no): Can you tell me why you did not vote?

Ineligible
Actual.....
Perceived.....

(Write in details)_____

_____

Exogenous

Out of town.....

Sick.....

Otherwise engaged; e.g. working, could not leave children, etc.....

Unable to get to poll because of weather, transportation problems, etc.....

Issue Factors

Did not like candidates....

Did not understand issues..

Interest

Forgot about the election..

Do not bother.....

It is not important.....

Other

_____

66. (If yes): Did you vote on the money by-laws?

No.....

Yes.....

Don't know.....

67. Did you vote for a mayor and aldermen?

No.....

Yes.....

Don't know.....

68. Did you vote on the fluoridation issue?

No.....

Yes.....

Don't know.....

69. (If no): Can you tell me why you didn't vote?

Didn't know enough about it..

Contradictory evidence.....

Other_____

70. (If yes): Did you vote for or against fluoridation in the city water?

For.....

Against.....

71. Does your political party take a particular stand on the fluoridation issue?

No.....

Yes.....

Don't know.....

72. (If yes): What stand do they take?

For.....

Against.....

Don't know.....

73. Do any of the political parties, other than your own, take a particular stand on the fluoridation issue?

No.....

Yes.....

Don't know.....

74. (If yes): Which parties and what stand?

Party	For	Against	Don't Know
_____	___	_____	_____
_____	___	_____	_____

- 8 -

75. Do you think that political parties should take a stand on the fluoridation issue?

No.....

Yes.....

Don't know.....

(If "no" probe for force of response; e.g., not a political matter.)

(If "yes" probe for direction of party's influence; e.g., political beliefs on fluoridation issue or injunction to vote.)

76. I am going to ask you to indicate
77. your interest in politics, fluori-
78. dation, city elections and money
79. by-laws. On this card you will see a scale of numbers from 1 to 7 for each of these areas--1 represents "very interested," 7 represents "not interested at all" and, of course, 4 would represent "moderately interested." Would you please indicate, using this scale, how interested you are in the various issues.

(Present card)

80. Please tell me the number which best expresses your attitude towards fluoridation.

(Present card)

81. Can you tell me why you feel this way?

Anti

Insufficient evidence--disagreement on the part of scientists.....

82. Specific detrimental effects:
Poisoning.....
Mottling.....
Dangerous to sick people.....
Radio-active.....
Other (specify)

83. Commercial:
Proposed by commercial interests
Proposed by dentists for their own profit.....
Wastes money and can be done cheaper with individual drugs.....

84. Civil Liberties:
Personal rights (specify)

85. Political Pressures:
Communist plot.....
Other (specify)

Pro

86. Beneficial effects to teeth.....
87. Cheapest mode of administration.
88. Adequate scientific evidence....
89. Other (including Don't know)

90. Have you seen any leaflets on fluoridation?

No.....

(If no, proceed to question No. 104)

Yes.....

(If yes): Were they:

91. Delivered to the door.....
92. Received through the mail.....

93. Received at a public meeting.. ____
94. Given to you by your dentist.. ____
95. Given to you by a friend..... ____
96. Don't know..... ____

97. What did you do with the leaflets?

Glance over them..... ____
98. Read them carefully..... ____
99. Show them to wife/husband..... ____
100. Show them to a friend..... ____
101. Throw them away without reading..... ____
102. Don't know..... ____

103. Did you see more leaflets which were for fluoridation or more which were against fluoridation?

More for..... ____
More against..... ____
Equal number of each..... ____
Don't know..... ____

104. Have you ever attended a public meeting where fluoridation was discussed?

No..... ____
Yes..... ____

105. (If yes): Was the meeting in favor of fluoridation or against it?

For..... ____
Against..... ____
Information seeking..... ____
Both sides presented..... ____
Some meetings of each for and against..... ____
Don't know..... ____
Other (specify) ____

106. What kind of people would you say voted for fluoridation? (Probe here for background characteristics.)

Those with or without children:

With..... ____
Without..... ____

107. More or less formal education:

More..... ____
Less..... ____

108. Younger or older people:

Young..... ____
Old..... ____

109. Professional or working classes:

Professional..... ____
Working Class.... ____

110. Other (include Don't know) ____

111. What kind of people would you say voted against fluoridation? (Probe for background characteristics.)

Those with or without children:

With..... ____
Without..... ____

112. More or less formal education:

More..... ____
Less..... ____

113. Younger or older people:

Young..... ____
Old..... ____

- 10 -

114. Professional or working classes:
Professional.....
Working Class....

115. Other (include Don't know)

116. Much of the support for fluoridation has come from organizations of dentists. Why do you think dentists support fluoridation?

Positive
General concern with public welfare, promotion of better dental health
They are the ones who know about these things.....
Dentists are overworked--fluoridation would lead to fewer dentists being required.....

Negative
To make more money in terms of the harm fluoridation will do--commercial interest.....
They do not know enough about it.....
Did not think dentists supported it.....

Indifferent
Don't know.....
Could not understand why dentists should support it.....

117. Other dentists do not support fluoridation and in fact oppose it. Why do you think this is?

Positive
Protecting the public.....
They are the ones who know.....

Negative
Will make them more money in that fluoridation will affect their business.....
They do not know enough about it.....
Personal biases--specify. (e.g. religion)
Doubts professional qualifications.....
There is always an opposing minority in issues like this...

Indifferent
Never heard of dentists opposing it.....
Do not know why.....
Cannot understand why they oppose it.....
Because they believe it is harmful.....
Because of the controversial evidence.....

118. Have you ever discussed the fluoridation issue with others?

No.....
Yes.....

119. (If yes): With whom?

Your husband/wife (if married).
120. Friends.....
121. Relatives.....
122. Your dentist.....
123. Your doctor.....
124. Those with whom you work.....
125. Your neighbours.....
126. People in church.....

127. Others_____

128. How would you say the following people feel about fluoridation?

	For	Agnst.	Indif.	D.K.
Husband/wife				
129. Friends				
130. Relatives				
131. Your dentist				
132. Your doctor				
133. Those with whom you work				
134. Your neighbours				
135. People in church				
136. Others				

137. If fluoridation came up again for a vote, what do you think the outcome would be?

Defeated....._____

Passed....._____

Would not like to predict...._____

Don't know....._____

138. Why do you think it would be defeated/passed? (Probe here for factors that the respondent thinks will influence the outcome of a plebiscite.)

_____

_____

139. In making up your mind about fluoridation, which of the following persons or groups would you say was important to you? (Ask for response after each alternate.)

Friends....._____

140. Church or religion....._____

141. Your political party....._____

142. A club or organization to which you belong (specify)_____

143. Your dentist....._____

144. Your doctor....._____

145. Your wife/husband....._____

146. Fellow employees....._____

147. Relatives....._____

148. Information you have seen or read....._____

149. Other....._____

150. Here are a number of statements in favor of fluoridation. Would you please circle those statements with which you agree.
(Present list)

151. Here are a number of statements opposing fluoridation. Would you please circle those statements with which you agree.
(Present list)

==========

For Interviewer only: Please rate the respondent on degree of cooperativeness. Rating of 1 is most cooperative; rating of 7 is least cooperative. Circle number.

1 2 3 4 5 6 7
(most) (least)

==========

THANK RESPONDENT FOR COOPERATION

==========

APPENDIX B

A NOTE ON THE RESPONDENTS ATTENDING THE MUNICIPAL POLLS BUT NOT VOTING ON THE FLUORIDATION PLEBISCITE

Twenty-six respondents reported attending the municipal polls but claimed that they did not cast a vote on the fluoridation issue. Since these respondents constitute fifteen per cent of those of the sample who attended the municipal polls, their failure to vote merits some explanation.

The voting statistics of the City of Edmonton record the number of votes that were cast on each separate electoral issue. There is no record, however, of the total number of people who attend the polls. Thus, there is no way of computing the number of voters who deliberately abstained from voting on one or a number of issues presented at the polls. For this reason, it is conceivable that, although the votes recorded on the mayoralty election and on the fluoridation plebiscite were approximately equal (51,949 and 50,112, respectively, excluding spoiled ballots), the actual total attendance at the polls could have been considerably higher, some individuals choosing to abstain from voting on one issue or the other. In actual fact, nine of the respondents can be accounted for in this way since nine respondents reported not voting on the mayoralty elections. In addition, on a proportionate basis, the difference in turn-out between the mayoralty election and fluoridation plebiscite may account for the incidence of three or four respondents in the sample who had not voted on the fluoridation issue.

The foregoing argument suggests that incidence in the sample of twelve or thirteen respondents who had gone to the polls but who had not voted on the fluoridation issue is not inconsistent with the turn-out figures. The actual incidence, however, of twenty-six respondents in the sample displaying this voting pattern needs further explanation. Some light is thrown by examination of the reasons given by these respondents for not voting on fluoridation.

Fifteen of these respondents gave reasons that might be interpreted as supporting the contention that the reported voting pattern was, in fact, their actual voting behaviour. These respondents said either that they did not know enough about the issue to vote or that the contradictory evidence prevented them from making a decision -- either of these responses suggests a deliberate abstention. The remaining respondents either did not know why they had not voted, claimed to be ineligible to vote on the issue, or said that they were not interested in fluoridation. These responses are less suggestive of deliberate abstention and may represent explanation of a false report as to their voting behaviour. The false reports could take one of two forms. First, they may have reported turning out to the municipal polls when they had not. Secondly, they may have claimed to have not voted on fluoridation when, in fact, they had.

Neither of these explanations is entirely satisfactory. It is difficult to see why, for example, a respondent would dissemble in reporting turning out to the municipal polls and then fail to follow through with the confirmation that he had voted on the fluoridation issue. It is, of course, possible that the

question as to the voting behaviour at the plebiscite was perceived as being independent to that of the turn-out at the municipal elections -- hence, the respondent would not recognize the inconsistency involved in reporting voting on one but not the other issue. On the other hand, there appears to be no reason why an individual should wish to conceal the fact that he had voted on the fluoridation issue although it may be that the respondent had not realized or had forgotten that he had voted on the issue.

There appears to be some evidence that the voting pattern of those attending the municipal polls but refraining from voting on the fluoridation issue was actually characteristic of perhaps five to ten per cent of the voting population. The higher percentage of respondents in the sample who reported this voting pattern cannot be readily accounted for, however, on the basis of the available data.

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